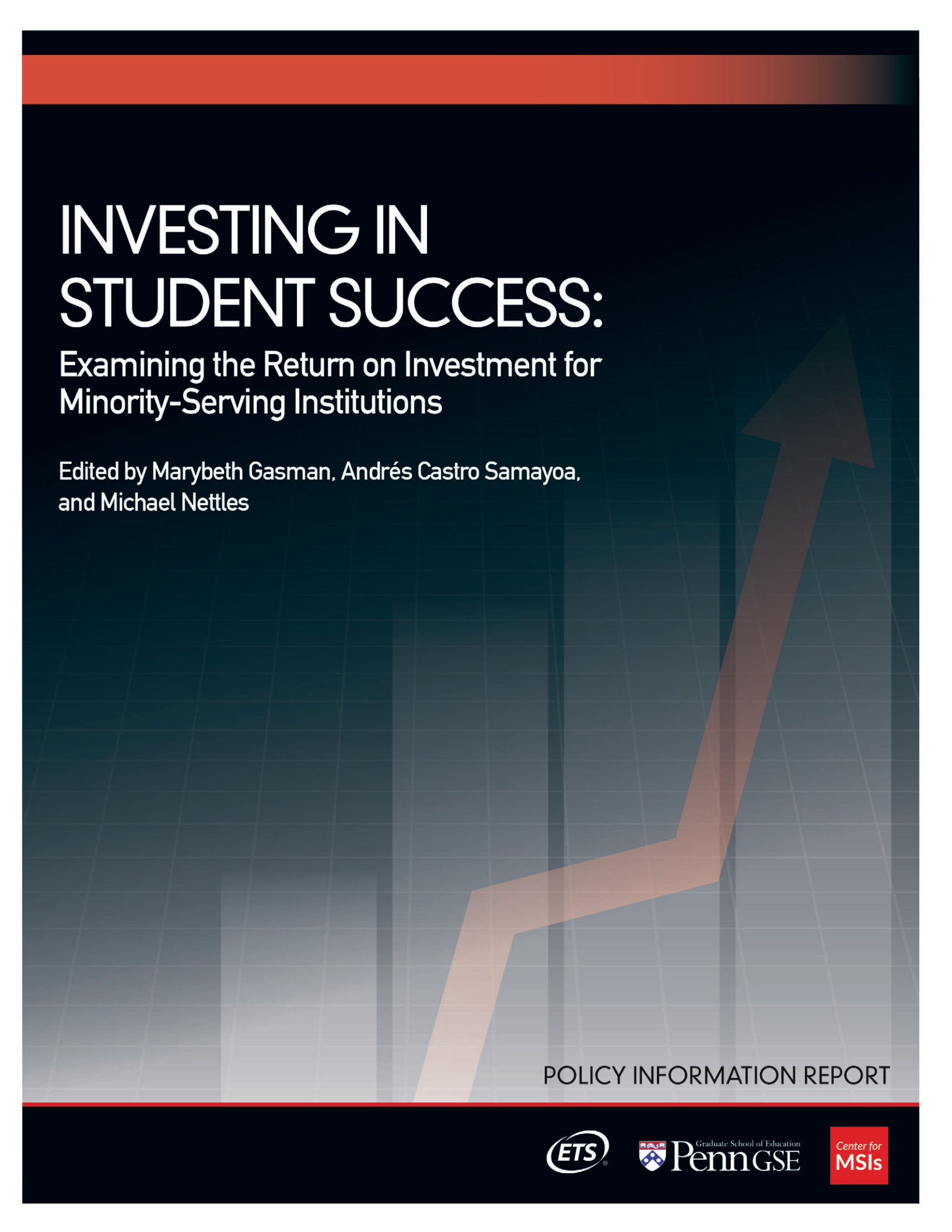
# INVESTING IN STUDENT SUCCESS:

## Examining the Return on Investment for Minority-Serving Institutions

Edited by Marybeth Gasman, Andrés Castro Samayoa, and Michael Nettles



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RESEARCH REPORT

# Investing in Student Success: Examining the Return on Investment for Minority-Serving Institutions

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Although minority-serving institutions (MSIs) educate nearly one fifth of the nation's college students, there is to date little research on MSI's return on investment (ROI). To address this, the University of Pennsylvania and Educational Testing Service commissioned four papers focusing on the ROI for MSIs, which were presented originally in December 2015 at the National Convening on Return on Investment for Minority Serving Institutions. This report contains the four papers presented at the seminar, as well as an introduction.

**Keywords** Minority-serving institutions (MSIs), Hispanic-serving institutions (HSIs), historically Black colleges and universities (HBCUs), tribal colleges and universities (TCUs), Asian American, Native American, and Pacific Islander–serving institutions (AANAPISIs), return on investment (ROI)

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## 1. Introduction

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This paper provides an overview of the return on investment for minority-serving institutions (MSIs), highlighting past work and providing a foundation for the new work presented in this edited volume.

**Keywords** Student success; investment; race; equity

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Minority-serving institutions (MSIs) educate 20% of the nation's college students, including large percentages of first-generation students and students from low-income families as well as students of color (Gasman & Conrad, 2015). However, these institutions—including Hispanic-serving institutions (HSIs), historically Black colleges and universities (HBCUs), tribal colleges and universities (TCUs), and Asian American, Native American, and Pacific Islander–serving institutions (AANAPISIs)—are often excluded from national conversations regarding increasing college opportunity and

maligned by media, scholars, and policy makers as making only marginal contributions. One reason MSIs are overlooked is because there is little research on their return on investment (ROI).

ROI is a major focus within higher education communities, with various entities defining ROI in both complementary and divergent ways. The Center on Education and the Workforce (2011), for example, issued a report that explored the economic value of various college majors, further cementing the use of projected income gains based on academic majors as a key metric to understand higher education's ROI. Likewise, the Pew Research Center (2011) conducted a survey that also looked at the perceptions of the economic viability of attending college. More recently, Gallup (2014) conducted a poll in partnership with Purdue University exploring a more holistic view of graduates' lives by examining workplace engagement and participants' social, financial, communal, and physical well-being.

There have also been a few reports related to the economic impact of various segments of the MSI community. In 2000, the American Indian Higher Education Consortium issued a report on tribal college contributions to local economies. The National Center for Educational Statistics (2006a) released a report that looked at HBCUs' ROI in their local communities and at the state level. And, in 2014, the National Commission on Asian American and Pacific Islander Research in Education issued a report that focused, in part, on AANAPISIs' contributions to student success as well as the value of investing in these institutions. To date, despite their rapid growth and large number (more than 350), there has not been a major report on the ROI of HSIs.

In 2015, in collaboration with Educational Testing Service, we commissioned four reports that focus on the ROI for the major MSI types. The reports' authors presented their work in December 2015 at the first National Convening on Return on Investment for Minority Serving Institutions. Herein, we present the four reports for your review, commentary, discussion, and challenge.

The first paper, authored by Toby J. Park, Stella M. Flores, Christopher J. Ryan, Jr., & Chris D. Jimenez is titled "Return on Investment for Graduates of Hispanic-Serving Institutions in Texas: A Comparative Analysis of Institutional Types." As we know, Hispanics have become the largest minority group in the nation (Ennis, Rios-Vargas, & Albert, 2011). A significant demographic shift has also occurred in the U.S. higher education population, as Latinos have replaced Black students as the largest minority group attending 2- and 4-year institutions (Fry & Lopez, 2012). A majority of these students now attend 2- or 4-year HSIs, a category of institution that is accredited, that grants degrees, and whose full-time-equivalent undergraduate enrollment is at least 25% Hispanic (Santiago & Andrade, 2010; U.S. Department of Education, 2009).

To date, little to no research exists on the effect of attending an HSI on the individual wages earned by Latinos. That is, once a college degree is earned, do wages differ by the type of 4-year institution attended by Latinos? The authors sought to explore this question using a unique student-level administrative database in Texas. After accounting for college selectivity, there was no difference in the earnings of Hispanic graduates from HSIs and non-HSIs. This finding is important, as HSIs are often criticized for low graduation rates and poor labor market outcomes. Not only has previous research demonstrated that Hispanic students graduate from college at equal rates at HSIs compared to non-HSIs after controlling for student and institutional characteristics (Flores & Park, 2014) but this analysis suggests similar outcomes in regard to labor market outcomes: Hispanic students graduating from HSIs have comparable earnings to Hispanic graduates from non-HSIs after accounting for selectivity.

This fact is made even more relevant by considering that the majority of Hispanic students in Texas tend to enroll at nonselective or moderately selective institutions, and HSIs in general tend to be funded at 66 cents per dollar compared to all other postsecondary institutions (Hispanic Association for Colleges and Universities, 2015). HSIs will continue to be important in the postsecondary education and earnings story for Hispanics in the United States; Park and Flores's report has laid a strong foundation, and continued research is warranted in this arena.

The second paper, "Reframing Return on Investments for Tribal Colleges and Universities: Aligning Analyses With Tribal Priorities and Educational Missions," is authored by Stephanie Carroll Rainie and Ginger C. Stull. TCUs serve dual missions: to educate students and to address American Indian tribal priorities. Owing to this unique status, mainstream ROI metrics fail to fully align with TCU missions. The report critiques mainstream measures of ROI in the tribal context and provides insights into alternative ROI evaluation methods.

Educational benefits, such as critical thinking skills, improved self-esteem, leadership, community engagement, and life satisfaction, are not measured by current data collection practices. TCUs prioritize these and many other difficult-to-quantify gains, like community engagement, language revitalization, leadership, and cultural appreciation. Calculating mainstream measures of ROI for TCUs is also complicated by the external variables and inequalities that can influence ROI

calculations. For example, gender, race, and parental earnings are all strongly correlated to differences in income. Therefore institutions that primarily serve minorities, women, and students of low income, as TCUs do, will demonstrate a lower individual ROI than institutions that serve predominantly White, male, and affluent students—*regardless of institutional performance*—as a result of long-standing socioeconomic inequities.

Even if TCUs transcend the ROI discussion to evaluate indigenous-defined students and other outcomes, poor data for TCUs and tribal communities hinder the assessment of TCUs' dual mission of educating students and addressing tribal priorities. Tribes and TCUs should lead the movement to improve data, both locally and nationally. Tribally driven, community-based, and nation-defined outcomes, methods, and measurements that reflect TCU missions are a critical element of moving toward assessing TCUs' success, their positive impact on communities, and their value in the larger scope of educating tribal and U.S. citizens.

The third paper, authored by Terrell L. Strayhorn, is titled "A Return on Investment Analysis for Black Graduates of Historically Black Colleges and Universities: Insights From Three Studies." Much of the research on returns on postsecondary education investments has suggested that earning a bachelor's degree significantly influences one's economic success and labor market outcomes, such as earnings, occupational status, and job satisfaction. Still, there has been fairly consistent debate about the "educational justification" of HBCUs and whether such institutions confer labor market advantages on Black graduates compared to those who earn a bachelor's degree from predominantly White institutions (PWIs) or other non-HBCUs.

The paper presents results from a three-part study that measured the returns on one's investment in earning a bachelor's degree from an HBCU in the United States. Building on a previous analysis (Strayhorn, 2008), the author conducted a series of analyses in Study 1 using a blend of statistical methods with a rigorous set of statistical controls to understand the influence of graduating from an HBCU (vs. a non-HBCU) and institutional selectivity on labor market outcomes for a nationally representative sample of African American college graduates. Study 2 uses National Survey of Black Americans (NSBA) data to explore the relationship between graduating from an HBCU (vs. a PWI) and Black Americans' occupational status, job satisfaction, and four social psychological measures (i.e., self-esteem, Black identity, psychological distress, and life satisfaction). Study 3 is based on one-on-one exploratory interviews with a relatively small group of HBCU graduates.

Findings generally suggest positive returns on Black students' investment in attending and graduating from an HBCU, especially in terms of occupational status and Black identity, although results were mixed in terms of annual earnings and job satisfaction. A summary of key findings is as follows: (a) Black graduates from HBCUs earn lower annual salaries, on average, compared to same-race graduates from PWIs, and these differences persist even when controlling for institutional selectivity; (b) Black graduates from HBCUs assume higher status occupations compared to same-race graduates from PWIs, and these differences persist even when controlling for institutional selectivity; (c) Black graduates from HBCUs report higher scores than same-race PWI graduates on the NSBA Black identity index; (d) Black graduates from HBCUs and PWIs generally do not differ in terms of job satisfaction, self-esteem, and psychological distress, although occupational status (SEI) differences approach statistical significance in Study 2; and (e) Black graduates from HBCUs are socialized to higher status occupations in college, HBCU environments affirm their racial/ethnic identity, and many Black HBCU graduates report significant nonmonetary returns on their educational investment. Important implications for policy, practice, and future research are also discussed.

And the last paper, titled "The Return on Investment for AANAPISI-Funded Programs: Outcomes for Asian American and Pacific Islander Community College Students," is written by Cynthia M. Alcantar, Margary Martin, Bach Mai Dolly Nguyen, Robert T. Teranishi, and Jossie Muñoz. Over half of all students who enroll in community college are in need of remediation (Bailey, Jeong, & Cho, 2010). Additionally, studies have found that students who take at least one remedial course in a community college are less likely to transfer and earn a college degree (Bailey, 2009). One approach to improving the educational outcomes of students in developmental education is through learning communities (LCs). Accordingly, in this study, the authors examined the impact of an AANAPISI-funded developmental education LC on the educational outcomes of low-income Asian American and Pacific Islander (AAPI) students at one community college.

Utilizing institutional data and an in-depth assessment of an AANAPISI-funded LC, a *value-added* framework guided the use of propensity score matching techniques to attempt to isolate the added value of participating in this LC. The authors assessed the value added by the AANAPISI LC by evaluating the short-term (i.e., transition from developmental to college-level courses and credit accumulation) and long-term (persistence from one academic term to the next, degree

attainment, and transfer to a 4-year institution) outcomes of AAPI students in the LC compared to AAPI students in developmental education who did not participate in an LC. By matching students in the LC with students also in developmental education but not in an LC, the authors were able to identify a positive ROI for this federally funded program on educational attainment rates for this community college.

The authors found that AAPI students in the federally funded LC were more likely to transition from developmental to college-level English and to do so in less time, to pass their subsequent college-level English courses, and to earn more associate degrees than AAPI students in developmental education who did not participate in an LC. Additionally, analysis on targeted subgroups (i.e., Southeast Asians and Pacific Islanders) in the AANAPISI LC revealed improved educational outcomes compared to those who did not participate in LCs.

These four reports offer a start to understanding ROI within the MSI context. We hope that readers will build on this work. We also know that to have rigorous, solid research, it is paramount that researchers interested in MSIs and ROI have the right tools. We think these tools include honest and transparent national higher education data (through the Integrated Postsecondary Education Data System [IPEDS])—an IPEDS system that represents both traditional and nontraditional students; communication across the various silos in higher education, such as policy makers, researchers, and institutional leaders; culturally responsive definitions of ROI that speak to the uniqueness of the MSI context; student-level data that are easily available and comprehensive in nature; disaggregated data that consider the great diversity among students at MSIs; cultural sensitivity in data collection and analysis; and partnerships across various types of MSIs and MSI-related organizations and the sharing of data.

In addition to the right tools, researchers need to engage the appropriate people. To produce high-quality work pertaining to MSIs and ROI, we need the voices of students, college and university leaders, media, politicians, policy makers, the federal government, local governments, student affairs professionals, community leaders, MSI-related organizations, and college and university institutional researchers.

And, most importantly, when researchers are measuring ROI within the MSI context, they must consider student satisfaction with their college experiences; job placement after graduation; percentage of graduates in service-oriented work; mentorship, networking, and social capital gained from the college experience; and the impact of MSIs on the local community and state.

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## 2. Return on Investment for Hispanic-Serving Institutions in Texas: A Comparative Analysis of Institutional Types

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In this study, we explore the return on investment in terms of labor-market returns for Latino students who attend a Hispanic-serving institution (HSI) in comparison to Latino students who do not. We employed a Texas student-level database and used institutional type as the treatment variation within the 4-year sector to examine labor market outcomes for Latino students in Texas 10 years after high school graduation. We found that there was no difference between the earnings of Latino students who graduated from HSIs and those who graduated from non-HSIs.

**Key words** Return on investment (ROI); Hispanic students; Hispanic-serving institutions (HSIs)

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## Hispanic-Serving Institutions' Increasing Role in the U.S. Labor Market

Carnevale, Smith, and Strohl (2010) estimated the lifetime earnings of those with a college degree to be $1.6 million higher than those with only a high school diploma, representing greater than a 191% increase in lifetime earnings over high school graduates. High school graduates can expect to earn 68% more than nonhigh school graduates, while those with associate degrees or some college are likely to earn 26% more than high school graduates. It is not surprising, then, that in states where Latinos already compose the majority-minority group, the cost of not educating this population goes beyond the matter of individual wages and threatens state and national economic welfare (M. Smith, 2011). These figures suggest that the points in the educational pipeline most likely to result in a big jump in Latino wages are graduation from high school, enrolling in any college, and obtaining a bachelor's degree. It is this latter milestone that we seek to explore in this study — the effect of a 4-year college degree for Latino students in the schools they are most likely to attend: Hispanic-serving institutions.

To date, little to no research exists on the effect of attending a particular type of institution on the individual wages earned by Latinos. That is, once a college degree is earned, do wages differ by type of 4-year institution attended by Latinos? Previous work examining the effect of attending a selective public flagship university in Texas found that Whites were more likely to benefit from attending this institution as compared to their Black and Latino student peers in regard to wages (Andrews, Li, & Lovenheim, 2012, 2014). However, Latinos are not likely to attend a selective 4-year institution in Texas; instead, Latinos are more likely to attend HSIs (Flores & Park, 2013). We continue to explore this work in Texas, a prime state from which to examine Latino educational opportunity in the state's higher education system as well as how this opportunity is rewarded in the labor market after a student graduates from college through returns in wages. There are 185 postsecondary institutions in Texas, excluding for-profit schools; 51 of these are HSIs, among which five are HSIs that have dual designation with another minority-serving institutions (MSIs) type, such as a historically Black college or university (HBCU) or an Asian American and Native American Pacific Islander-serving institution (AANAPISI; Boland, Gasman, & S.,, & Jimenez, C., 2017; National Center for Education Statistics, n.d.). In addition, the research on labor market return for wages has often only been assessed from the perspective of comparing Whites to non-Whites. To address this research gap, our study provides an exploratory examination of the labor market returns for Latinos at HSIs compared to other Latinos using institutional type as the treatment variation within the 4-year sector. For additional analyses see T. J. Park, Flores, and Ryan (2017).

## Background: Examining Labor Market Returns via Selectivity versus Institutional Type

Recently, researchers have begun to untangle the heterogeneous nature of college and explore how different types of universities may have differential returns for graduates in the labor market. Earlier studies of labor market returns to college tended to focus on college as a mostly homogenous treatment, making any divisions only along broad categorizations such as 2-year versus 4-year schools (e.g., Kane & Rouse, 1995). Studies in the last few years have provided additional analytic detail by assessing the value of a selective college degree (Long, 2010) and, most recently, the value of attending a selective flagship public university[1] along with certain majors (Andrews et al., 2012, 2014; Hoekstra, 2009). This vein of exploring the role of selectivity includes substantial research to back up the convention that attending a more selective institution yields greater earnings in the labor market for graduates (Dale & Krueger, 2002; Zhang, 2005b). However, shifting the analytical frame from college selectivity to institutional type is an underexamined means of comparing the labor market returns of colleges that serve similar demographics of students; this is an important methodological difference between our study and past research, especially because it allows for greater insight into labor market outcomes as they are differentiated among racial and ethnic categories.

For example, recent studies have also explored the heterogeneous nature of college by analyzing the labor market returns of attending a specific institutional type: HBCUs. Three studies have framed the outcomes to date on the effect of attending an HBCU on individual wages. Fryer and Greenstone (2010) utilized three large datasets to examine labor market consequences of HBCU attendance and found that between 1970 and 1990, there was a 20% decline in relative wages of HCBU graduates that eventually resulted in a wage penalty as compared with attending a predominantly White institution (PWI). Additionally, Strayhorn (2008) used Baccalaureate and Beyond longitudinal survey data from the 1993 and 1997 cohorts to examine the labor market outcomes for Black college graduates attending HBCUs and found a moderate negative statistically significant effect between attending an HBCU and postbaccalaureate earnings. In a later

meta-analysis of three studies, however, Strayhorn (this volume) found that while Black graduates from HBCUs tend to earn lower annual salaries, on average, compared to same-race graduates from PWIs, they also tend to assume higher status occupations compared to same-race graduates from PWIs, and these differences persist even when controlling for institutional selectivity.

Other recent examples of studying the effect of institutional type on labor market returns also exist, particularly in reference to other MSI types. In their analysis of AANAPISIs, Alcantar, Martin, Nguyen, Teranishi, and Muñoz (this volume) found that De Anza College's AANAPISI grant-funded developmental LC improved the quality and speed of students transitioning from developmental to college-level English courses when compared to a control group of students. Likewise, Rainie and Stull (this volume), in their critique of traditional return on investment (ROI) metrics with regard to tribal colleges and universities, noted that "the current methods of computing ROI for educational institutions may not be entirely valid for evaluating educational outcomes and socioeconomic impacts" (p. xx). In short, studying the effect of institutional type on ROI and labor market returns is essential not just for comparing efficacy between institutions but also for developing better methodologies to understand qualitative differences that cannot be easily assessed through traditional data analysis.

While these studies do not represent the definitive answer on how institutional type affects graduates' wages, they are helpful in understanding how analysts may better construct research questions to examine this relationship. Improving the understanding of this relationship is crucial for correcting any prevailing misperceptions about HSIs and MSIs in general.

As Texas is one of two states (the other being California) with the highest number of HSIs, and because it has well-curated data suited for the purpose of answering questions regarding ROI and labor market returns, we chose it as the ideal site for this study. The purpose of this paper then is to examine whether attending an HSI plays a long-term role regarding the earnings of Hispanic college graduates in Texas. If so, what are the particular differences in student characteristics that are associated with these differential outcomes?

Two key points are relevant in this analysis. First, as mentioned, the role of institutional type on long-term outcomes such as wages with the advent of new data sources has been underexamined. Second, previous research has suggested that minority students account for the greatest growth in the number of students attending college, many of whom enroll in MSIs (Conrad & Gasman, 2015). Despite this trend, little is known about the labor market outcomes of minority students from MSIs such as HBCUs and HSIs as compared to other minority students who attend similarly ranked but less racially diverse institutions. This study seeks to fill that void by descriptively examining the earnings of graduates of HSIs. We make no causal claims in this analysis although we hope that this early examination into the role of different institutional types on earnings helps inform the developing scholarship of higher education.

## Conceptual Framework

A number of empirical studies have confirmed that college graduates earn more than high school graduates (Card, 1999; Pascarella & Terenzini, 1991, 2005; Smart, 1986). Indeed, Goldin and Katz (2007) have found that the correlation between education and labor market outcomes continues to increase in the United States. Although some have questioned the extent to which education truly is the causal mechanism behind increased earnings, many have demonstrated that — net of other factors — education still has a strong impact on labor market outcomes (Hout, 2012). In particular, previous research has demonstrated that students from socially or economically disadvantaged backgrounds tend to show the greatest gains from advanced education — a theory known as *negative selection* (Brand & Xie, 2010; Hout, 2012). As of 2014, 81.2% of the population in Texas hold a high school diploma, yet only 35% of young adults (ages 25 – 34) hold an associate degree or higher (Boland et al., 2017). Likewise, baccalaureate degree attainment varies significantly by race, where 46% of White students have earned a bachelor's degree compared to just 18% of Hispanic students (Boland et al., 2017). The variance in these numbers based on degree attainment hints at a correlated variance of labor market outcomes as disaggregated by race. As Texas' Hispanic population grows, the state's labor market will undoubtedly be affected by the postsecondary educational opportunities and access afforded to Latino students — the majority of whom are mediated by HSIs.

One lens to investigate the relationship between education and earnings is human capital theory, which suggests that the education and skills acquired by individuals will result in greater earnings in the labor market (Becker, 1964, 1967, 1993). As such, we controlled for measures of academic ability, major area of study, and years of experience, all known to have an effect on labor market earnings (Mincer, 1974; Pascarella & Terenzini, 2005). Further, additional research has

demonstrated that an important extension to human capital theory is conditioning earning functions by the location of individuals, as local prices and economic health also influence local wages (Black, Kolesnikova, & Taylor, 2009). In addition to human capital theory, another lens through which to investigate differences in labor market outcomes is social and cultural capital theories, which suggest that information available via formal and informal networks as well as normative structures put in place by local context may also influence earnings (Bourdieu & Passeron, 1977; McDonough, 1997). As such, and as has been done in several previous studies, we include proxies for social and cultural capital through measures of community context and economic capacity (Núñez & Bowers, 2011; Perna, 1998, 2004; Strayhorn, 2008; Zhang, 2005b).

Given that Hispanic postsecondary students are over 151% more likely to attend 2-year colleges than to attend 4-year universities (Flores & Park, 2013), we argue that these students stand to benefit greatly from postsecondary education, in line with the negative selection theory (Hout, 2012). Furthermore, because evidence finds that Hispanic students graduate at equal rates from HSIs as compared to Hispanic students who attend non-HSIs after controlling for similar measures of capital as defined above (Flores & Park, 2014), we now evaluate how wages of graduates of HSIs compare to graduates of non-HSIs 10 years after baccalaureate degree receipt — an area that has received very little scholarly attention to date, due in part to policy interest, data access, and availability.

## Previous Literature

Aside from the studies mentioned above, few reports exist relating to the economic consequences of attending an MSI, and none seem to employ econometric models to examine the individual ROI of attending an MSI. What is known about MSIs and especially HSIs, to date, is largely descriptive. For instance, a report commissioned by the Center for Urban Education at the University of Southern California has indicated that Hispanic students in California are disproportionately enrolled in community college, and thus, the majority of HSIs within the state are 2-year institutions (Malcom-Piquex et al., 2013). According to Boland et al. (2016), over 60% of Californian Latino college students attend an HSI, and of those, over 72% of Latino students are enrolled in an HSI community college. However, two concurrent studies — Flores and Park (2013) and Rodriguez and Calderón-Galdeano (2013) — employed a more rigorous approach to compare HSIs to non-HSIs, using propensity-score matching based on the outcomes of an institution's graduates, including its graduation rates. These studies suggest three principal findings: First, HSIs and non-HSIs are different in terms of student compositions, institutional resources, and finance structures; for instance, HSIs tend to enroll more total students than non-HSIs. Second, propensity score matching on institutional characteristics yields mixed results; for example, some HSI institutions by sector did not have non-HSI matches. Finally, once matched, HSIs and non-HSIs had comparable outcomes, going against the notion that HSIs underperform (Flores & Park, 2013; Rodriguez & Calderón-Galdeano, 2013). As yet, there has not been a major study discussing the economic impact of HSIs or the individual ROI of attending an HSI.

## Background on Hispanic-Serving Institutions

From the mid-1990s to 2004, the number of HSIs grew from 2% to 9% of total postsecondary institutions (Li, 2007). In 2014, there were a total of 409 HSIs in the United States, a 116% increase from 189 institutions in 1995 (Excelencia in Education, 2015a). Of these 409 HSIs nationally, 81 were 4-year public universities, 190 were 2-year public colleges, 125 were 4-year private not-for-profit institutions, and 13 were 2-year private not-for-profit institutions (Excelencia in Education, 2015b). The institutions are typically located in the far west and the southwest regions of the United States. Because of its classification requirements, the designation *HSI* does not mean that the institutions were founded to specifically focus on promoting the education and growth of Hispanic students (Harmon, 2012). Regardless, HSIs serve 42% of all Hispanic students, a figure that grows every year, with a concentration of institutions in Florida, Texas, and California (Gasman, Baez, & Turner, 2008; Harmon, 2012). In addition, the students attending HSIs are more likely to be first-generation college students, from low-income backgrounds, and those students with lower levels of academic preparation (Flores & Park, 2014; Gasman et al., 2008; Harmon, 2012; Institute for Higher Education Policy, 2004; Li, 2007). For instance, in 2003, approximately 44% of Hispanic students attending HSIs were low-income versus the 30% attending non-HSIs (Li, 2007).

## Texas Hispanic-Serving Institutions

Focusing on the Texas context, Texas contained 64 HSIs (including for-profit institutions) in 2004 that educated 23% of the Hispanic students in American postsecondary education. As of 2017, the number of Texas HSIs is now 51 (excluding

for-profit institutions), and Hispanic enrollment comprised the majority of all Texas MSIs at 46% for both full- and part-time students (Boland et al., 2017). Further, Texas contains the second largest number of HSIs after California, with the majority of those institutions at the 2-year level (Li, 2007). The racial/ethnic breakdown of students attending eligible HSIs in 2008, for example, was: 55% Hispanic, 9% African American, 27% White, and 9% Asian American. From 2010 to 2020, the Texas Hispanic population is projected to grow by 31%, far outpacing the White population's projected growth of 2% (Fletcher & Webster, 2010). As the designation for an HSI is determined by its enrollment percentage of Hispanic students, this suggests that the number of HSIs in Texas will increase over the next decade. Therefore, studying their effect on graduation rates in comparison to non-HSIs has become critical to ensuring that the policy goals of increased attainment held by varying grant-disbursing organizations (e.g., the Lumina Foundation) are met. Labor market returns are likewise tied to degree attainment at HSIs.

Table 2.1 provides a list of the 4-year public universities included in our analysis, by selectivity and HSI designation. We included all 4-year public universities in Texas from which students in our cohorts graduated.[2] Only institutions that awarded primarily bachelor's degrees at the time of our analyses were included. Thus, institutions that have since begun awarding bachelor's degrees in addition to their primary purpose of awarding associate degrees were excluded. At the time our cohorts graduated from high school, Texas was home to nine 4-year public HSIs,[3] all of which were classified as either *nonselective* or *somewhat selective*. All of the institutions classified as *more selective* or *selective* are non-HSIs and include the two major flagship universities in the state: The University of Texas at Austin and Texas A&M University in College Station.[4]

As noted, Hispanic students in Texas experience labor market gains from attending a state flagship university, yet these more selective institutions are also the institutions that Hispanic students in Texas are the least likely to attend (Andrews et al., 2012, 2014; Flores & Park, 2013). For these reasons, we introduce sample restrictions by selectivity of institution attended in order to provide a more accurate and fair comparison of earnings for graduates of HSIs compared to non-HSIs, as discussed in more detail in the research design section.

## Texas Economic Regions

Texas' regional economies are classified by state agencies into: economic regions, which is the classification used by the Texas Comptroller's Office, and workforce development areas by the Texas Market and Career Information, a program of the Texas Workforce Commission. In many cases, economic regions are synonymous with or are comprised of multiple workforce development areas. The HSIs used in our analysis are located in the following economic regions: Alamo (University of Texas at San Antonio); Coastal Bend (Texas A&M University-Corpus Christi and Texas A&M University-Kingsville); Gulf Coast (University of Houston-Downtown); South Texas Border (Texas A&M International University, University of Texas Pan-American, and University of Texas at Brownsville); and Upper Rio Grande (Sul Ross State University, and University of Texas at El Paso).

On the whole—and with the exception of the Gulf Coast economic region, which encompasses Texas' largest city, Houston—these regional economic areas tend to support service industry jobs, as opposed to professional industry jobs, and lower average weekly wages than the state average. The top three industries by number of employees in these regions are: (a) trade, transportation, and utilities; (b) education and health services; and (c) travel and leisure. While unemployment rates vary among these regions and are occasionally above state averages, average weekly wages in these regions are well below state weekly wage averages (Texas Workforce Commission, 2015). Importantly, none of the HSIs used in our analysis are located in two of Texas' largest economic regions, after the Gulf Coast region—the Metroplex and the Capital.

## Research Design

### *Data Sources*

Data for this paper came from the Education Research Center housed at the University of Texas at Dallas (UTD-ERC). The UTD-ERC manages student-level data from the Texas Education Agency, the Texas Higher Education Coordinating Board, and the Texas Workforce Commission. Through the use of a deidentified student indicator, we were able to link these data together and include information on students from their time in school up through postcollege employment.

**Table 2.1** Hispanic-Serving Institution (HSI) Designation and Selectivity of Texas Public Universities

| Institution | Selectivity | HSI |
|---|---|---|
| University of Texas-Pan American | Not selective | Yes |
| University of Houston-Downtown | Not selective | Yes |
| University of Texas-El Paso | Not selective | Yes |
| A&M-International | Not selective | Yes |
| A&M-Corpus Christi | Not selective | Yes |
| University of Texas-Brownsville[c] | Not selective | Yes |
| Tarleton State University | Somewhat selective | No |
| Texas Women's University | Somewhat selective | No |
| University of Texas-Permian Basin | Somewhat selective | No |
| Texas Southern University | Somewhat selective | No |
| Sul Ross State University | Somewhat selective | Yes |
| A&M-Kingsville | Somewhat selective | Yes |
| University of Texas-San Antonio | Somewhat selective | Yes |
| University of Texas-Tyler[b] | Somewhat selective | No |
| University North Texas | Selective | No |
| University Houston | Selective | No |
| Stephen F Austin State University | Selective | No |
| Sam Houston State University | Selective | No |
| University of Texas-Arlington | Selective | No |
| Angelo State University | Selective | No |
| West Texas A&M | Selective | No |
| Lamar University | Selective | No |
| Texas State University | Selective | No |
| Prairie View A&M | Selective | No |
| A&M-Commerce | Selective | No |
| Midwestern State University | Selective | No |
| University of Texas-Austin | More selective | No |
| A&M-College Station | More selective | No |
| Texas Tech | More selective | No |
| University of Texas-Dallas | More selective | No |
| A&M-Galveston[a] | More selective | No |

*Note*. Selectivity rankings come from Barron's 1997 selectivity index, are used for all cohorts, and are time-invariant for the time period in this study.

[a]Degrees from A&M-Galveston are granted through A&M College Station. [b]UT-Tyler is not included in the 1997 cohort due to data collection limitations. [c]UT-Brownsville is not included in the 1997 and 2000 cohorts due to data collection limitations on status of institution. UT-Brownsville was in a formal partnership with Texas Southmost College, a 2-year institution, until 2011, making data collection efforts on solely its 4-year partner institution difficult for this analysis.

Our independent variable of interest, whether a student graduated from an HSI, was defined using the federal designation of any institution that is accredited, grants degrees, and whose full-time-equivalent undergraduate enrollment is at least 25% Hispanic (Santiago & Andrade, 2010; U.S. Department of Education, 2009, 2013). Our other independent variables included measures of *student background characteristic (gender, economic and ELL status), high school academic preparation (rigorous course taking, math courses and scores), community context (high school pupil-teacher ratio, enrollment, percentage minority in school, per-pupil expenditures), economic capacity of student, years of experience in labor force following high school, college major, and location of the job 10 years after high school graduation*.

Our dependent variable — labor market return as represented by wages — data were collected from the Texas Workforce Commission and were reported quarterly with separate records for individuals reporting income from more than one source. We define annual earnings as the total earnings reported in a calendar year (four-quarter) cycle beginning in January, 10 years following high school graduation. For example, earnings for the 1997 cohort come from 2007, earnings for the 2000 cohort come from 2010, and earnings for the 2002 cohort come from 2012 (Mincer, 1974). We did not adjust wage figures for inflation in our models as each cohort was examined separately and since we were interested in the difference in earnings between HSI and non-HSI graduates. However, we do present constant, CPI-adjusted 2002 dollars

in our descriptive portrait. Finally, due to the distribution of the earnings data, we took the natural log of wages for use in our analytic model.

### *Sample*

Given limitations associated with merging three independent data sources, we included three cohorts of Hispanic students who graduated from a public high school in Texas in the spring of 1997, 2000, and 2002, analyzing each of these cohorts separately. These particular cohorts were selected because it allowed us to collect data for time ranges that fit within the required 6-year graduation rate for the last year of data available at the time of our study. Moreover, each year represents a cohort prior to a particular policy change within Texas higher education. For example, 1997 represents a year before the full implementation of the Texas Top Ten Percent Plan. The year 2000 represents a year before the implementation of the in-state resident tuition policy, House Bill 1403, as well as a new influx of state financial aid. Finally, 2002 represents the year before the implementation of deregulation in Texas colleges and universities that significantly increased tuition as compared to other states in the nation (Flores & Shepherd, 2014). In order to be included in the cohorts, individuals must have (a) enrolled in a public 4-year university in Texas in the fall immediately following graduating from high school, (b) completed a college degree within 6 years, (c) possessed no missing data on any of the covariates used in the analysis, and (d) showed earnings of at least $100 in all 4 quarters in the calendar year (4-quarter) cycle beginning in January, 10 years following high school graduation. Unlike other studies, however, we did not restrict our sample to only include males. We followed similar conventions incorporated previously by Andrews et al. (2012, 2014) and Hoekstra (2009), who also utilized similar data.

### *Data Limitations*

The data were subject to a number of limitations in regard to the availability of a full comprehensive list of variables that may be available in national datasets, such as parental education and income and generational status in the United States. Further, we did not have data on private schools or earnings data for individuals working outside of Texas. However, we emphasize the opportunity provided by these individual level state data in that they (a) are connected to wage records not available nationally, (b) provide a longitudinal perspective on multiple cohorts across various economic periods in the United States and Texas, and (c) provide the opportunity to evaluate wages at the individual level accounting for high school, postsecondary, and community contexts through the ability to incorporate other national datasets due to school and geographic identifiers tied to the student precollege and postsecondary experience in the state. Thus, while no dataset is perfect, we argue that it is worthwhile to investigate individual level wage returns to attending these particular types of institutions, especially since they have not previously been evaluated in this manner.

### *Analytic Approach*

To evaluate differences in labor market returns between institutional types, we first compiled a detailed descriptive portrait of Hispanic college graduates who attended HSIs compared to non-HSIs, with a focus on labor market earnings. In doing so, we examined not only the earnings data but also the student characteristics of graduates as well as the geographic location where these individuals were working. Next, we examine the net effect of graduating from an HIS on earnings through a logistic regression model where earnings (logged) is the outcome HSI attendance is the primary variable of interest controlling for the set of characteristics noted earlier that relate to academic preparation, community context, economic capacity, years of experience in the labor market, and fixed effects for major and location of employment (Cellini & Chaudhary, 2012; Dagdar & Weiss, 2012). We also address issues of selectivity by performing two iterations of the model, one of which uses restrictions based on Barron's selectivity index. Second, we restrict our sample to include only those Hispanic students attending a nonselective or a somewhat selective institution. We did this in order to provide a more reasonable comparison between HSIs and non-HSIs as there are currently no HSIs in the top Barron categories. In essence, we made comparisons between comparably ranked institutions; put another way, our evaluation of institutional type in this context allowed for greater specificity by comparing HSIs against non-HSIs with similar levels of selectivity. As this is not a causal analysis, we attempted to construct a model with a number of controls designed to capture human and social capital factors and then restricted our sample in a manner that provided a more accurate comparison between institutions.

**Table 2.2** 1997 Cohort: Descriptive Statistics

| | Total ($N = 2,106$) Mean *SD* | HSIs ($N = 1,007$) Mean *SD* | Non-HSIs ($N = 1,099$) Mean *SD* | Difference |
|---|---|---|---|---|
| Wages | | | | |
| 1997 dollars | 48,080.31 | 45,180.66 | 50,737.22 | −5,556.56 |
| | *20,676.12* | *16,683.84* | *23,447.15* | |
| Constant 2002 dollars | 53,885.90 | 50,636.12 | 56,863.62 | −6,227.50 |
| | *23,172.71* | *18,698.37* | *26,278.34* | |
| Student background characteristics | | | | |
| Sex (% male) | 39.65 | 39.87 | 37.62 | 2.25 |
| | *48.93* | *48.98* | *48.47* | |
| LEP status | 1.95 | 3.38 | 0.64 | 2.74 |
| | *13.82* | *18.07* | *7.96* | |
| High school academic preparation | | | | |
| AP or IB course | 41.88 | 34.56 | 48.59 | −14.03 |
| | *49.35* | *47.58* | *50.00* | |
| Trigonometry course | 53.47 | 43.69 | 62.42 | −18.73 |
| | *49.89* | *49.63* | *48.45* | |
| Math exam score | 50.77 | 49.27 | 52.15 | −2.88 |
| | *8.02* | *8.08* | *7.71* | |
| Dual enrollment indicator | 12.35 | 8.54 | 15.83 | −7.29 |
| | *32.90* | *27.96* | *36.52* | |
| Community context | | | | |
| HS pupil-teacher ratio | 15.21 | 14.94 | 15.45 | −0.51 |
| | *2.28* | *2.09* | *2.42* | |
| HS enrollment | 1,828.43 | 1,752.70 | 1,897.82 | −145.12 |
| | *842.57* | *775.77* | *894.17* | |
| HS % minority | 70.07 | 82.45 | 58.74 | 23.71 |
| | *27.83* | *19.90* | *29.20* | |
| Log HS per pupil expenditures | 8.13 | 8.15 | 8.11 | 0.04 |
| | *0.11* | *0.10* | *0.11* | |
| HS urbanicity | 53.28 | 56.21 | 50.59 | 5.62 |
| | *49.90* | *49.64* | *50.02* | |
| County unemployment rate | 8.64 | 10.76 | 6.69 | 4.06 |
| | *6.33* | *7.01* | *4.89* | |
| Proximity to postsecondary | 84.43 | 86.20 | 82.80 | 3.39 |
| | *36.27* | *34.51* | *37.75* | |
| Economic capacity [ECON] | | | | |
| FRL status | 34.00 | 45.98 | 23.02 | 22.96 |
| | *47.38* | *49.86* | *42.12* | |
| Worked in HS | 13.06 | 10.53 | 15.38 | −4.85 |
| | *33.70* | *30.70* | *36.09* | |

*Note*. AP = advanced placement, FRL = free and reduced lunch, HS = high school, HIS = Hispanic-serving institution, IB = International Baccalaureate, LEP = limited English proficiency.

## Results

### *Descriptive Portrait*

Tables 2.2, 2.3, and 2.4 provide key descriptive statistics, such as mean and standard deviation, or the primary variables of the analysis, organized by the 1997 ($N = 2,106$), 2000 ($N = 2,781$), and 2002 ($N = 3,196$) cohort years. We present these in aggregated totals by year, as well as broken out by institution type (i.e., HSI or Non-HSI), and a differential column lists the difference between institution types. From these tables, two main themes emerge and are discussed below.

First, the story of wage differentials and economic disadvantage among institutional type is striking. For instance, in the 1997 cohort, graduates of non-HSIs held a $6,227.50 average wage premium over HSI graduates, a number that fell to $5,375.13 in the 2000 cohort but increased to $7,667.13 in the 2002 cohort (all expressed in constant, CPI-adjusted, 2002 dollars). This widening wage gap trend by institution type is consistent with wage gap differential literature. Along the

**Table 2.3** 2000 Cohort: Descriptive Statistics

| | Total ($N = 2,781$) Mean *SD* | HSIs ($N = 1,323$) Mean *SD* | Non-HSIs ($N = 1,458$) Mean *SD* | Difference |
|---|---|---|---|---|
| Wages | | | | |
| 2000 dollars | 49,200.85 | 46,503.14 | 51,648.78 | −5,145.64 |
| | *22,559.10* | *19,227.95* | *24,959.14* | |
| Constant 2002 dollars | 51,395.17 | 48,577.15 | 53,952.28 | −5,375.13 |
| | *23,565.22* | *20,085.50* | *26,072.30* | |
| Student background characteristics | | | | |
| Sex (% male) | 39.23 | 37.26 | 41.02 | −3.75 |
| | *48.84* | *48.37* | *49.20* | |
| LEP status | 1.01 | 1.59 | 0.48 | 1.11 |
| | *9.99* | *12.50* | *6.91* | |
| High school academic preparation | | | | |
| AP or IB course | 70.30 | 68.63 | 71.81 | −3.18 |
| | *45.70* | *46.42* | *45.01* | |
| Trigonometry course | 69.76 | 64.32 | 74.69 | −10.37 |
| | *45.94* | *47.92* | *43.49* | |
| Math exam score | 52.91 | 51.87 | 53.85 | −1.98 |
| | *6.60* | *7.24* | *5.80* | |
| Dual enrollment indicator | 22.76 | 18.59 | 26.54 | −7.95 |
| | *41.94* | *38.92* | *44.17* | |
| Community context | | | | |
| HS pupil:teacher ratio | 15.01 | 14.71 | 15.28 | −0.57 |
| | *2.39* | *2.20* | *2.53* | |
| HS enrollment | 1,791.75 | 1,670.17 | 1,902.08 | −231.91 |
| | *827.45* | *702.38* | *912.77* | |
| HS percent minority | 70.04 | 85.37 | 56.12 | 29.25 |
| | *29.10* | *17.76* | *30.37* | |
| Log HS per pupil expenditures | 8.29 | 8.30 | 8.29 | 0.01 |
| | *0.10* | *0.10* | *0.11* | |
| HS urbanicity | 53.97 | 59.11 | 49.31 | 9.79 |
| | *49.85* | *49.18* | *50.01* | |
| County unemployment rate | 5.54 | 6.42 | 4.73 | 1.69 |
| | *2.63* | *2.96* | *1.98* | |
| Proximity to postsecondary | 84.75 | 86.70 | 82.99 | 3.71 |
| | *35.95* | *33.97* | *37.58* | |
| Economic capacity | | | | |
| FRL status | 39.37 | 51.85 | 28.05 | 23.80 |
| | *48.87* | *49.98* | *44.94* | |
| Worked in HS | 14.42 | 9.15 | 19.20 | −10.06 |
| | *35.13* | *28.84* | *39.40* | |

*Note*. AP = advanced placement, FRL = free and reduced lunch, HS = high school, HIS = Hispanic-serving institution, IB = International Baccalaureate, LEP = limited English proficiency.

same lines, the percentage of students classified as economically disadvantaged grew by year, as did the gap by institutional type (1997: 45.98% at HSIs and 23.02% at non-HSIs, 2000: 51.85% at HSIs and 28.05% at non-HSIs, and 2002: 54.89% at HSIs and 29.94% at non-HSIs). Put differently, the proportion of HSI graduates who were classified as economically disadvantaged was nearly double that of non-HSI graduates in every cohort.

Second, in terms of academic preparation, we found that, by year, graduates of both HSIs and non-HSIs are better prepared for college entry over time; however, graduates from HSIs remained slightly underprepared in terms of participation in rigorous academic coursework for entry into postsecondary education as compared to graduates from non-HSIs. With regard to AP/IB courses, participation went from 34.56% in 1997 to 68.32% in 2000 to 65.65% in 2002 at HSIs and 48.59% in 1997 to 71.87% in 2000 to 75.13% in 2002 at non-HSIs. Thus, in terms of differences between the two types of institutions, graduates from HSIs were enrolled in this sort of advanced coursework at 14.03 percentage points lower than non-HSIs in 1997, but only 3.49 and 9.48 percentage points lower in 2000 and 2002, respectively. Further, the percentage

**Table 2.4** 2002 Cohort: Descriptive Statistics

| | Total ($N = 3,196$) Mean *SD* | HSIs ($N = 1,636$) Mean *SD.* | Non-HSIs ($N = 1,560$) Mean *SD* | Difference |
|---|---|---|---|---|
| Wages | | | | |
| 2002 dollars | 50,316.46 | 46,574.06 | 54,241.19 | −7,667.13 |
| | *22,559.10* | *19,227.95* | *24,959.14* | |
| Student background characteristics | | | | |
| Sex (% male) | 40.05 | 38.88 | 41.28 | −2.41 |
| | *49.01* | *48.76* | *49.25* | |
| LEP status | 0.50 | 0.61 | 0.38 | 0.23 |
| | *7.06* | *7.80* | *6.19* | |
| High school academic preparation | | | | |
| AP or IB course | 70.28 | 65.65 | 75.13 | −9.48 |
| | *45.71* | *47.50* | *43.24* | |
| Trigonometry course | 70.53 | 64.49 | 76.86 | −12.37 |
| | *45.60* | *47.87* | *42.19* | |
| Math exam score | 53.81 | 53.15 | 54.51 | −1.36 |
| | *7.13* | *6.87* | *7.34* | |
| Dual enrollment indicator | 33.89 | 33.56 | 34.23 | −0.67 |
| | *47.34* | *47.23* | *47.46* | |
| Community context [COMM] | | | | |
| HS pupil:teacher ratio | 15.01 | 14.71 | 15.28 | −0.57 |
| | *2.39* | *2.20* | *2.53* | |
| HS enrollment | 1,818.04 | 1,735.33 | 1,904.77 | −169.44 |
| | *837.92* | *735.37* | *925.78* | |
| HS percent minority | 71.71 | 84.23 | 58.58 | 25.64 |
| | *27.93* | *19.64* | *29.29* | |
| Log HS per pupil expenditures | 8.37 | 8.38 | 8.36 | *0.02* |
| | *0.10* | *0.11* | *0.10* | |
| HS urbanicity | 53.72 | 58.99 | 48.21 | 10.78 |
| | *49.87* | *49.20* | *49.98* | |
| County unemployment rate | 7.27 | 8.01 | 6.50 | 1.51 |
| | *2.38* | *2.67* | *1.71* | |
| Proximity to postsecondary | 82.13 | 84.60 | 79.55 | 5.05 |
| | *38.31* | *36.11* | *40.35* | |
| Economic capacity | | | | |
| FRL status | 42.71 | 54.89 | 29.94 | 24.95 |
| | *49.47* | *49.78* | *45.81* | |
| Worked in HS | 12.36 | 9.78 | 15.06 | −5.28 |
| | *32.92* | *29.71* | *35.78* | |

*Note*. AP = advanced placement, FRL = free and reduced lunch, HS = high school, HIS = Hispanic-serving institution, IB = International Baccalaureate, LEP = limited English proficiency.

of graduates who participated in dual enrollment programs while still in high school are nearly the same between institutional types in later years, with the differential between HSIs and non-HSIs shrinking from 7.29 percentage points in 1997 to 0.67 percentage points in 2002.

### *Logistic Regression Results*

Table 2.5 presents regression results for our cohorts. For each, Model 1 is the full sample and Model 2 is the selectivity-restricted sample. All models include the full array of covariates that account for differences in human capital, social capital, and location of employment (Texas economic region) 10 years after graduating from high school. In each cohort, the full model reveals a negative and statistically significant relationship between graduating from an HSI and earnings; however, the restricted model that accounts for selectivity shows no difference in the earnings of Hispanic graduates from HSIs and non-HSIs. Significant in most of the models, however, is gender (with males earning more than females), performance on the state math exam (with higher scores associated with higher earnings), and years of experience (which

**Table 2.5** Regression Model Results Predicting Log(Earnings)

| | 1997 | | 2000 | | 2002 | |
|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model1 | Model 2 | Model 1 | Model 2 |
| HSI designation | | | | | | |
| HSI | −0.071*** | −0.088 | −0.065** | 0 | −0.108*** | −0.085 |
| | [0.02] | [0.07] | [0.02] | [0.07] | [0.02] | [0.06] |
| Student background characteristics | | | | | | |
| Sex (percent male) | 0.041* | −0.001 | 0.084*** | 0.069* | 0.068*** | 0.063** |
| | [0.02] | [0.03] | [0.02] | [0.03] | [0.02] | [0.02] |
| LEP status | 0.101 | 0.136* | 0 | 0.018 | −0.147 | −0.280* |
| | [0.06] | [0.07] | [0.09] | [0.09] | [0.11] | [0.14] |
| High school academic preparation | | | | | | |
| AP or IB course | 0.017 | 0.032 | 0.021 | −0.019 | 0.038* | 0.045 |
| | [0.02] | [0.03] | [0.02] | [0.03] | [0.02] | [0.02] |
| Trigonometry course | 0.022 | 0.026 | 0.056** | 0.029 | 0.004 | 0.007 |
| | [0.02] | [0.03] | [0.02] | [0.03] | [0.02] | [0.02] |
| Math exam score | 0.003** | 0.002 | 0.004** | 0.004* | 0.003* | 0.005*** |
| | [0.00] | [0.00] | [0.00] | [0.00] | [0.00] | [0.00] |
| Dual enrollment indicator | 0.022 | 0.057 | 0.04 | 0.053 | 0.054** | 0.066** |
| | [0.03] | [0.04] | [0.02] | [0.03] | [0.02] | [0.03] |
| Community context | | | | | | |
| HS pupil:teacher ratio | 0 | −0.011 | 0 | 0.002 | −0.001 | 0.002 |
| | [0.01] | [0.01] | [0.01] | [0.01] | [0.00] | [0.01] |
| HS enrollment (1,000 s) | 0.004** | 0.007** | 0.001 | −0.004 | 0.002 | 0.002 |
| | [0.00] | [0.00] | [0.00] | [0.00] | [0.00] | [0.00] |
| HS percent minority | 0.046 | 0.079 | 0.01 | 0.065 | 0 | 0.062 |
| | [0.04] | [0.07] | [0.04] | [0.07] | [0.04] | [0.06] |
| HS per pupil expenditures | 0.203* | 0.285 | −0.138 | −0.028 | −0.13 | −0.048 |
| | [0.10] | [0.15] | [0.10] | [0.14] | [0.09] | [0.12] |
| HS urbanicity | −0.055** | −0.032 | −0.011 | 0 | −0.013 | −0.009 |
| | [0.02] | [0.03] | [0.02] | [0.03] | [0.02] | [0.02] |
| County unemployment rate | 0.002 | 0.002 | 0.007 | 0.003 | 0.004 | −0.004 |
| | [0.00] | [0.00] | [0.00] | [0.01] | [0.00] | [0.01] |
| Proximity to postsecondary | 0.044 | 0.005 | 0.034 | 0.031 | −0.033 | −0.034 |
| | [0.03] | [0.04] | [0.03] | [0.04] | [0.02] | [0.03] |
| Economic capacity | | | | | | |
| FRL status | −0.035 | −0.034 | −0.057** | −0.048 | −0.035* | −0.049* |
| | [0.02] | [0.03] | [0.02] | [0.03] | [0.02] | [0.02] |
| Worked in HS | 0.069** | 0.076 | 0.052* | 0.096* | 0.019 | 0.039 |
| | [0.03] | [0.04] | [0.02] | [0.04] | [0.02] | [0.04] |
| Years of experience | | | | | | |
| Years | 0.021*** | 0.014 | 0.035*** | 0.035*** | 0.028*** | 0.031*** |
| | [0.01] | [0.01] | [0.01] | [0.01] | [0.00] | [0.01] |
| Includes major area fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Includes economic region fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| *N* | 2,106 | 1,046 | 2,780 | 1,376 | 3,196 | 1,711 |
| *R*-squared | 0.171 | 0.14 | 0.174 | 0.175 | 0.195 | 0.201 |

*Note*. Standard errors are in square brackets. AP = advanced placement, FRL = free and reduced lunch, HS = high school, HIS = Hispanic-serving institution, IB = International Baccalaureate, LEP = limited English proficiency.
*$p < .05$. **$p < .01$. ***$p < .001$.

average nearly a 3% increase in wages earned per each additional year of experience). With regard to our primary variable of interest — labor market returns as represented by wages — our models used logged wages as the outcome variable, and the coefficients in the table are interpreted as a percentage change in actual earnings. More specifically, Model 1 shows 7.1%, 6.5%, and 10.8% lower earnings for graduates of HSIs compared to non-HSIs for the 1997, 2000, and 2002 cohorts, respectively. However, in Model 2, there is no statistically significant difference between the earnings of graduates of HSIs compared to graduates of non-HSIs — Hispanic graduates from HSIs earn just as much as graduates non-HSIs with similar selectivity.

## Discussion

As Boland et al. (2017) contended, "As Texas goes, so does the nation: it is quickly becoming more racially diverse and comprised of people who speak languages other than English." To this end, our study sheds further light on HSIs—a growing segment of American higher education, especially in Texas—and the population of students these institutions serve. Descriptively, we find that differences exist between Hispanics who graduate from HSIs compared to non-HSIs in terms of postgraduation earnings as well as precollege academic preparation and contextual factors, both known to also have an influence on earnings. However, we demonstrate, descriptively, that differences in earnings between Hispanic students graduating from HSIs compared to non-HSIs are driven by selectivity, not HSI designation. When comparing graduates of HSIs versus non-HSIs with similar selectivity, there is no difference in wages after controlling for our measures of human and social capital and the region of Texas where college graduates are employed 10 years after finishing high school.

This finding is important, as HSIs are often criticized for low graduation rates and poor labor market outcomes. This criticism, as noted, has caused many HSIs to refrain from embracing their HSI designation, even as that designation makes them eligible for increased federal funding. Not only has previous research demonstrated that Hispanic students graduate from college at equal rates at HSIs compared to non-HSIs after controlling for student and institutional characteristics (Flores & Park, 2014), this analysis suggests similar outcomes in regard to labor market outcomes: Hispanic students graduating from HSIs have comparable earnings to Hispanic graduates from non-HSIs after accounting for selectivity. More selective institutions, by definition, have more restricted admissions policies and enroll a more academically prepared body of students. Analyses that compare HSIs to non-HSIs without accounting for the enormous role of selectivity should be questioned or at least acknowledge the important role of selection bias in interpreting such results. Proper comparison groups are the most accurate way to present research when available. If such data are not available, a common limitation in many analyses, we recommend acknowledging this limitation.

Of course, the analyses do not suggest that Hispanic students should not seek to attend selective institutions. Rather, the analyses illuminate the need for accounting for key elements to reduce selection bias in the analysis of outcomes by institutional types. That is, compared to institutions of similar selectivity, Hispanic graduates of HSIs are earning similar wages as compared to their Hispanic peers in similarly ranked non-HSIs in the Texas labor market. This fact is made even more relevant by considering that the majority of Hispanic students in Texas tend to enroll at nonselective or moderately selective institutions and HSIs in general tend to be funded at 66 cents per dollar compared to all other postsecondary institutions (Hispanic Association for Colleges and Universities, 2013). HSIs will continue to be important in the postsecondary education and earnings story for Hispanics in the United States; this study has laid a strong foundation and continued research is warranted in this arena.

## Recommendations

In light of these findings and given the limited existing research in this area, we offer the following recommendations and insights for the continued study of Hispanic students and HSIs, and minority students at MSIs more generally:

1. *More studies on HSIs in other state contexts using student level data*. This study is one of the first to examine how Hispanic students graduating from HSIs fare in the labor market compared to graduates of non-HSIs, but our findings are limited to Texas. While the dataset utilized is rich, provides for longitudinal tracking of students, and is housed in a state with a large number of HSIs and Hispanic postsecondary students, studies conducted in other contexts would help tell a more complete story of labor market returns to HSIs across the country. For instance, California, New York, and Florida all have sizeable Hispanic populations and databases similar to Texas with which similar studies could be conducted.
2. *Access to data and financial support*. Part of the reason studies like this one have not been conducted in other states is the challenge and expense of data access. In Texas, for example, researchers apply for data access through of the Education Research Centers (ERCs) across the state. After internal review, the request is forwarded to the Joint Advisory Board (JAB), composed of members of the Texas Education Agency, the Texas Higher Education Coordinating Board, and other appointed members from across Texas and the rest of the country. After approval by the JAB, out of state researchers pay a fee (upwards of $45,000) for 2 years of data access and must travel to the ERC in order to

access the data. Thus, without formal process to obtain data access and financial resources to enable researchers to conduct these analyses, papers like this are not possible.

3. *Building closer partnerships*. In order to secure access to state data, researchers often must identify how the proposed work meets the state's objectives, yet the mutually beneficial nature of researchers and state agencies is not always realized. In Florida, for instance, researchers apply to use the state education dataset and are required to demonstrate how the proposed research meets the current educational priorities of the state. While it is clearly important to help inform the state on key issues the state has identified, it could also be important to draw state attention to matters perhaps not directly identified already or not on the state's policy agenda. Agency-researcher partnerships, while difficult to achieve, can have many benefits including being proactive in addressing the forthcoming changes in a state's K-16 higher education system. Investment in agency-researcher partnerships is an investment in identifying more accurate, efficient solutions to improving educational policy and programming across the K-16 trajectory of American education.
4. *Making broader data linkages across states*. The Texas dataset allowed us to track students from the K-12 school system into postsecondary education and into the workforce. As noted, however, the dataset is subject to a number of limitations, including not being able to track students who finish college and/or work outside Texas during our period of study. If, for instance, an individual leaves Texas to pursue work in another state, this individual is not included in our sample. Thus, without the ability to access employment data on individuals who leave Texas, we cannot tell a complete story. Although expanding data linkages to other states has many challenges, only by moving in this direction will we ever be able to tell a complete story of the role of education in the well-being of individuals in the United States. The State Higher Education Executive Officers (SHEEO) has developed reports that show the beginning of partnerships within and across states for linking data between sectors (K-16) and across some states (T. L. Garcia & L'Orange, 2010). Researchers should take time to familiarize themselves with possibilities, limitations, and priorities of state governments to more clearly understand if particular research agendas related to underserved students and institutions are part of these current agendas.
5. *Longitudinal data analysis*. In addition to broader linkages, data must be collected and analyzed in a longitudinal manner. As mentioned, measuring the effect of postsecondary education on labor market outcomes cannot be accurately done in a narrow window following graduation. Ideally, earnings data should be collected when students are in their late 20s and early 30s to provide a first glimpse of the ROI. If possible, multiple years of earnings data from this timeframe could be averaged together to create a more stable figure of earnings, an important next step in our line of inquiry. In addition, longitudinal data analysis allows researchers to account for other factors beyond postsecondary education such as graduate training. This, too, is a future line of inquiry for our work: to capture not only the effect of graduate degrees on labor market outcomes but also the factors, including HSI attendance, that predict graduate degree completion for Hispanic students.
6. *Acceptance of and attention to a changing demography in U.S. higher education*. U.S. higher education is experiencing a series of profound changes related to demography, technology, costs, and outcomes. As policies are suggested, implemented, and retracted, we recommend that precise and sustained attention to the changing student demography of U.S. higher education be a key priority for all states. Unresponsiveness to the evolving national demography is costly and counter to the goals of improving educational opportunity not only for civic and social justice reasons but also for economic survival of states and institutions. A changing demography in our state contexts and institutions requires unifying our efforts for educational opportunity for the good of states and the nation. Further investment in underserved students, the data systems, and the detailed architecture of said systems and in the evidence-based recommendations that result from these data are likely the overall economic and educational opportunities of all states and populations of the United States. The institutions that educate the largest minority in the nation — HSIs — are at the forefront of these strategies.
7. *Further studies of other institutional types, including different MSIs*. As mentioned elsewhere in this study, it is only recently that analyses of labor market returns have begun including institutional type as a metric of analysis. A large segment of higher education institutions are composed of HSIs, and they are often the same institutions for which traditional methods of data analysis fall short. Incorporating MSIs into studies such as this one provides not only for greater understanding of the field of higher education, but it also creates a need for improved methods of apprehending multivariate outcomes such as ROI or labor market returns. As shown in this study, current

hierarchies of categorization that differentiate HSIs from non-HSIs may be merely nominal even though public perception of their efficacy suggests otherwise. Regardless, pursuing further research of different institutional types will allow for finer-grained analyses of important trends in higher education, of which labor market returns are only one.

## Conclusion

While we have laid a strong foundation upon which additional studies can be built, not enough research exists studying the effect of HSIs, and MSIs more generally, on more distal outcomes such as labor market returns and graduate degree acquisition. How does the effect of attending an HSI vary based on state context? Within Texas, what is the role of HSIs in both the acquisition of graduate degrees and the effect of graduate degrees on labor market outcomes? More detailed answers to these questions and others are only possible with enhanced access to and availability of high quality data.

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# 3. Reframing Return on Investments for Tribal Colleges and Universities: Aligning Analyses With Tribal Priorities and Educational Missions

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Tribal colleges and universities (TCUs) serve dual missions: educating students and addressing American Indian tribal priorities. Due to this unique status, mainstream return on investment (ROI) metrics fail to fully align with TCU missions. This report discusses the history of ROI for educational institutions, the ROI literature for TCUs, complications of applying ROI to TCUs, data restrictions that prohibit TCU outcomes analyses, and reframes the ROI conversation for TCUs. It concludes with suggestions for alternative outcomes evaluation methods, indicates possible ways to address data challenges, and provides recommendations for future actions.

**Keywords** Tribal colleges and universities; return on investment; tribal sovereignty; Native American education

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Since the 1950s, the value of education has been increasingly evaluated in economic terms. Students and societies wonder if the time, money, and effort invested in educational enterprises will produce a return significant enough to merit

their investment. Determining return on investment (ROI) for education has traditionally been calculated with easy-to-measure outcomes, such as salaries. Focusing solely on the economic gains that education produces dismisses other important outcomes that contribute to social and individual well-being (Baum, Ma, & Payea, 2013; Institute for Higher Education Policy [IHEP], 2005, 2007). ROI conversations rise in complexity when applied to minority-serving institutions (MSIs), especially tribal colleges and universities (TCUs). TCUs are expected to provide meaningful social returns to students and tribes but are often evaluated by external agencies through measures that do not resonate with tribal priorities (American Indian Higher Education Consortium [AIHEC], 2010; Higher Learning Commission [HLC], 2013).

TCUs, usually tribally controlled, 2- to 4-year higher education institutions located on reservations, serve Native and non-Native students in predominantly rural areas. TCUs are young institutions; the relatively short history of TCUs began with the founding of Diné College by the Navajo Nation in 1968. The progress TCUs made in the last 48 years is particularly impressive considering that the first community college was founded in 1901 and the first MSI in 1837. Today, there are 37 TCUs in 14 states with more than 30,000 enrolled students. Thirty-four of these TCUS are accredited by mainstream accrediting bodies, particularly the Higher Learning Commission (HLC) and the Northwest Commission on Colleges and Universities (American Indian College Fund [AICF], 2014a, 2014b). TCUs, often included with MSIs, differ distinctly from other institutions that serve minority ethnic groups because tribes are sovereign polities with government-to-government relationships with the United States and because Native peoples have collective rights in addition to their individual rights (IHEP, 2007; United Nations General Assembly, 2007). TCUs serve a dual mission: the mainstream mission of educating students as well as the mission of addressing tribal priorities (IHEP, 2007). Owing to this unique status compared to other publicly funded higher education institutions, mainstream ROI metrics fail to fully align with TCU missions.

This report discusses the history of ROI for educational institutions, the ROI literature for TCUs, complications of applying ROI to TCUs, severe data restrictions that prohibit outcome analyses of TCUs, and how to reframe the ROI conversation for TCUs. It concludes with suggestions for alternative outcome evaluation methods, indicates possible ways to address data challenges, and provides recommendations for future actions.

## Tribal Colleges and Universities

TCUs emerged in the 1960s as part of the "self-determination" era, when tribes began more actively reasserting their rights as governing entities and the federal government recognized tribal sovereignty by legally granting self-governance over education and other affairs to tribal nations (Carney, 1999; Oppelt, 1990). The Navajo Nation established the first tribal higher education institution, Navajo Community College (now Diné College), fewer than 50 years ago, in 1968 (Carney, 1999; Diné College, 2015; Oppelt, 1990). This began a proliferation of tribally controlled institutions, each representative of the culture of the founding tribe and aimed at meeting the needs of the community (Figure 3.1; Oppelt, 1990).

TCUs differ from other institutions of higher education because they operate to fulfill a dual mission. Comparable to other educational institutions, one TCU mission is to educate students to prepare them to enter the workforce or pursue other educational opportunities. Unique to TCUs, however, is their mission to address tribal priorities, such as sustaining and conveying tribal culture, growing productive tribal citizens though courses and student support services tailored to tribal community and economic development goals, and meeting other particular tribal needs (IHEP, 2007). To enact their missions, TCUs offer a wide variety of degrees and skills, often tailored specifically to tribal and community needs.

The history of indigenous education in the United States, federal Indian policy, and socioeconomic conditions in Native communities intimately relate to and provide context for TCUs. European settlers and colonizers first utilized education as a method to assimilate indigenous peoples in the United States, a method that was later repeated by federal Indian policies (Boyer, 1997). Schools employed Western curricula and ignored indigenous ways of knowing, often banning Native languages and practices. Boarding schools further eroded tribal and social connections by removing children from tribal communities (Boyer, 1997). During the termination era, the federal government forcibly moved Natives to cities, eliminating many reservations, placing children in mainstream education, and moving many formerly federally administered reservation schools under state control. These actions served to assimilate Natives but also resulted in severed ties with tribes and traditions as well as negative impacts on socioeconomic status (Boyer, 1997; IHEP, 2007). In the 1960s, self-determination emerged, offering tribes the opportunity to control programs formerly administered by the federal government, including education (Boyer, 1997). Tribal leaders used

this as another opportunity to create education by and for Native peoples (IHEP, 2007; Oppelt, 1990). The Tribally Controlled Community College Act of 1978 and the Higher Education Act of 1965 affirmed the rights of tribes to educate their citizens (Crazy Bull, Lindquist, & Gipp, 2015; Oppelt, 1990).

**Figure 3.1** History of indigenous education in the United States.

## Fulfilling a Dual Mission

Generally, TCUs have been recognized as contributing to the growth and preservation of tribal cultures while at the same time educating tribal citizens and community members (IHEP, 2007). The skills TCUs help develop bolster tribal sovereignty and self-determination through leadership and economic development, increasing traditional and mainstream knowledge and engaging the nation-rebuilding goals of Native nations today (Grob, 2009; IHEP, 2007). TCUs serve 30,000 degree-seeking students per year, 47,000 community members through community programs per year, and 10% of American Indian and Alaska Native college students. Furthermore, 76% of TCU students are AIAN, 62% of students are first in their families to attend college, and 76% of TCU students are low income (AIHEC, 2012a).

To address TCU dual missions that include meeting mainstream educational goals as well as tribal priorities, TCUs offer four master's degree programs, 46 bachelor's degree programs, 193 associate's degree programs, and 119 certificate programs in a variety of fields (AICF, 2014b). Courses and degree programs range from accounting to small business entrepreneurship to computer information technology to Native languages, culture, and history (AIHEC, 2012b). In 2011, 28 TCUs offered American Indian studies degree programs, and enrollment in these programs doubled between 2003 and 2010 (AIHEC, 2012a). Through these programs and courses, students can learn vocational skills needed to improve tribal infrastructure, health professions needed to improve community well-being, and cultural courses to maintain tribal traditions. This skill and knowledge promotes rebuilding Native nations and strengthening tribal sovereignty (IHEP, 2007). TCUs have also collaborated with regional mainstream institutions through distance education and articulation agreements, opening up student access to additional courses and advanced degrees (Brayboy, Fann, Castagno, & Solyom, 2012). In an analysis of 13 TCUs, the American Indian College Fund (AICF) found that, on average, 8.5% of the students at the 13 TCUs transferred to other institutions, with individual rates varying from 2% to 24% (AICF, 2015).

**Table 3.1** Benefits Resulting From Higher Education in General and From Tribal Colleges and Universities on Reservations

| | Private | Public | Particular to reservations |
|---|---|---|---|
| Economic | • Higher salaries and benefits<br>• Employment<br>• Higher savings levels<br>• Improved working conditions<br>• Personal/professional mobility | • Increased tax revenues<br>• Greater productivity<br>• Increased consumption<br>• Increased workforce flexibility<br>• Decreased reliance on governmental financial support | • Workforce and skills development<br>• Greater opportunities for leadership and small businesses<br>• Economic growth and development<br>• Employment for graduates on reservations<br>• Agriculture and land development |
| Social | • Improved health/life expectancy<br>• Improved quality of life for offspring<br>• Better consumer decision making<br>• Increased personal status<br>• More hobbies and leisure activities | • Reduced crime rates<br>• Increased charitable giving/community service<br>• Increased quality of civic life<br>• Social cohesion and appreciation of diversity<br>• Improved ability to adapt and use technology | • Mitigation of social problems<br>• Centers for preservation of culture, language, and traditions<br>• Provision of further educational opportunities<br>• Technology transfer<br>• Community programs |

*Note*. Adapted from Institute for Higher Education Policy, "The Path of Many Journeys: The Benefits of Higher Education for Native People and Communities," 2007, retrieved from http://www.ihep.org/research/publications/path-many-journeys-benefits-higher-education-native-people-and-communities

In addition to the 30,000 degree-seeking students they serve, it is estimated that TCUs reach an additional 47,000 individuals each year through community-based education and support programs (AIHEC, 2012a). Programs such as Upward Bound, language and reading instruction, computer literacy courses, health and wellness classes, leadership development programs, and entrepreneurship courses, to name a few, all contribute to addressing individual tribal priorities and needs (AIHEC, 2012a). Participation in these programs grew by 84% between 2003 and 2010 (AIHEC, 2012a).

Thirty-four of the 37 TCUs obtain mainstream accreditation from regional accrediting organizations like the Higher Learning Commission. These accreditation entities assess student learning via mainstream outcomes, such as graduation rates and postgraduation earnings. Therefore assessment methods, data, and measurements often do not resonate with tribal priorities, culture, or indigenous ways of knowing. TCU leaders continue to educate accrediting bodies on tribally and culturally appropriate learning outcomes (HLC, 2013). As a result, accrediting agencies such as the Higher Learning Commission have made efforts to assess student outcomes from a more culturally aware position (AIHEC, 2010; HLC, 2013; Karlberg, 2007). Although these efforts have been made, many in the TCU community are calling for a tribally controlled accrediting body able to assess student outcomes from indigenous perspectives. Until this happens, mainstream methods of accreditation will fail to provide appropriate data and analyses to adequately assess student and other outcomes aligned with tribal, funder, and federal priorities.

The next section introduces mainstream concepts of ROI and discusses literature on applying this concept to TCUs.

## A National Focus on Return on Investment

ROI began as a business metric to measure the return of money invested in an economic enterprise and primarily assesses if an investment is lucrative enough to pursue. In the late 1950s, the concept of ROI from a human capital perspective was transposed onto education (Psacharopoulos & Patrinos, 2004). The expansion of higher education in the United States during the postwar Golden Era brought a dramatic increase of public funds devoted to universities. And as public investment grew, public expectations deepened (Millett, 1981). Society expected universities to meet multiple public needs, such as filling the expanding demand for educated talent in the American labor market, encouraging economic growth within the states, and advancing social mobility (Millett, 1981). In general, there were public expectations that higher education institutions would produce a return on the public's investment. These growing public expectations of ROI justified the growing role of the federal and state governments in setting higher education policy and influencing the behavior of institutions through funding formulas, grants, and state and federal legislation (Millett, 1981).

Although all public institutions continue to receive some public funding, the burden of the cost of higher education has shifted from the public to the individual. Since the 1980s, per-student state and federal investment has gone down while private investment, in the form of tuition and fees, has gone up (Finney, 2014). Tuition has risen 632% in the last 30 years (Finney, 2014), and with this increase in cost, students expect more return on their investment in the form of increased earnings and a lower likelihood of unemployment. From these two phenomena, the ROI of education is often conceptualized as either a social return or a private return.

### Definitions of Return on Investment

Mainstream definitions of ROI often discuss both private returns and social returns in economic measures (Baum et al., 2013; Hout, 2012; IHEP, 2005, 2007). The private ROI of education often comprises increases in salary and earnings and decreases in periods of unemployment (Baum et al., 2013; Hout, 2012). Social ROIs of education include increases in household income, decreased reliance on public assistance, improved health outcomes, and decreases in crime (Baum et al., 2013; Hout, 2012; IHEP, 2005). Broader definitions of ROI for higher education focus on human development, including private and social returns such as emotional and physical well-being, civic and community engagement, and workplace satisfaction (Gallup, 2014; IHEP, 2005, 2007).

### Return on Investments for Tribal Colleges and Universities

From 2000 to 2007, three entities issued reports on ROI for TCUs (AIHEC, 2000; IHEP, 2007; Janecek Hartman, 2007). In general, these entities examined ROI for TCUs using mainstream definitions. However, these reports also concluded that

to appropriately gauge ROI for TCUs, novel methods and measurements that align with tribal and TCU priorities must be employed.

In 2000, the AIHEC issued a report measuring the contributions of TCUs to economic growth on reservations (AIHEC, 2000). The report, "Tribal College Contributions to Local Economic Development," declared a new, tribally centered definition of economic development that focuses on human development as much as material development. The goal of economic development on tribal lands extends beyond wealth accumulation to community development and social renewal. The report demonstrated the direct contributions that TCUs provide to economic growth through (a) workforce and skills development; (b) showing the direct connection between academic programs and the needs of local employers and industries; (c) small business and entrepreneurship development, by offering small business support centers; (d) agriculture and land development, by offering programs on sustainable resource development; and (e) spending and employment. Most strikingly, the study noted the severe funding inequities that TCUs face compared to other land-grant institutions, stating that "the 30 land-grant Tribal Colleges receive approximately the same funding through land-grant-related appropriations that one state land-grant university does" (p. 25).

In 2007, the IHEP collaborated with AIHEC and the AICF to release the report *The Path of Many Journeys: The Benefits of Higher Education for Native People and Communities* (IHEP, 2007). Looking beyond the typical private and public economic and social returns, the authors examined returns that reflected the historical, economic, and cultural realities of American Indian reservation communities. The resulting matrix, in Table 3.1, offered a more nuanced understanding of the social and economic benefits of higher education for tribal communities specific to private, public, and reservation domains. The private and public benefits replicated those seen in mainstream ROI analyses. The reservation benefits spoke to internal returns and concerns specific to Native nations and the opportunities and challenges they face as governing entities. While community colleges and land-grant institutions may commit to serving similar community interests, such as workforce development and employment, tribes as sovereign nations endeavor to pursue greater community development goals, including sustaining and bolstering sovereignty and culture.

In addition to the preceding two reports, leaders of the United Tribes Technical College (UTTC) have developed a culturally appropriate ROI model for TCUs (Janecek Hartman, 2007). UTTC used a participatory research process to elicit how UTTC stakeholders defined culturally relevant ROI and developed a conceptual model intended to both be viable for other TCUs to utilize and be inclusive of measures credible to mainstream entities, such as the federal government, grantors, and accrediting bodies. UTTC project participants felt the resulting culturally relevant CREATION model contributed to the TCU's goal of tribal self-determination by infusing indigenous and TCU elements into the ROI framework. The model measured ROI at the program level, but some elements could transfer to determine ROI at the institution level. For example, one measure of ROI was the dissemination of traditional and contemporary American Indian cultural values. Key questions to determine this return are, How does the program promote a value of humility? How does the program promote respect for connectedness to the land? How does the program contribute to the understanding of tribal sovereignty? This line of questioning begins to unveil the more nuanced social returns that tribal leaders expect to receive from TCUs. Participants noted that lack of data limited TCUs' ability to assess ROI and identified possible data sources and opportunities to collect more data on ROI, such as end-of-term learning evaluations that assess traditional and contemporary American Indian knowledge, postinternship and postgraduation employment surveys, and financial data demonstrating institutional commitment to and impact on Indian Country (Janecek Hartman, 2007).

While these three reports set the stage for expanding measurements and methods for assessing the ROI for TCUs, little has been published since, in part because very little data exist, and what data do exist are of poor quality, cannot be compared across sites, and do not align with tribal and TCU conceptions of TCU outcomes.

## Innovations in Assessing Tribal College and University Student and Program Outcomes

A distinct relationship exists between tribal sovereignty and mainstream accreditation standards (Crazy Bull et al., 2015); though mainstream accreditation endorses the quality TCUs chartered by tribes, mainstream metrics and measurements do not always capture the indicators of interest to tribal nations and TCUs. To strengthen the connection between tribal sovereignty, TCUs' dual missions, and the methods and metrics for measuring progress toward those goals, there have been extensive tribally driven efforts to create culturally relevant assessments for TCU learning and program outcomes

(AIHEC, 2009). In 2004, AIHEC developed the American Indian Measures of Success (AIMS) and AIMS Key Indicator System (AKIS) in an attempt to "better evaluate the transformative nature of TCUs—and measure their impact and effectiveness in a way most relevant to their communities, their Nations and their funders" (AIHEC, 2012a, p. 1). These data collection methods consist of quantitative and qualitative measures. The quantitative data points include national-level Integrated Postsecondary Education Data System (IPEDS) measures as well as measures specific to TCUs, such as community participation numbers and developmental education numbers. The qualitative section reports on stories of success and challenges; best practices; and extracurricular, community, and cultural activities. AIMS and AKIS measure personal knowledge gains and program efficacy, which is slightly different from ROI's attempt to measure private and social gains. Yet the AIHEC frameworks have helped build data collection capacity among tribes, and their commitment to tribal traditions and culture should be replicated in ROI assessment.

AIHEC also developed the Indigenous Evaluation Framework (IEF) to guide TCUs through evaluating their programs and students' learning (AIHEC, 2009). IEF acknowledges that tribes have ways of assessing merit and worth based on their own traditional values and cultural expressions and that flexible and responsive evaluation methods will best serve tribal goals for self-determination and sovereignty (AIHEC, 2009). Supporting IEF efforts will strengthen TCU learning outcomes, which in turn may produce a greater ROI.

The AIMS, AKIS, and IEF initiatives provide a solid foundation for the creation of tribally driven, nation-based, and nation-defined outcome methods and measurements that reflect TCU missions. These initiatives are a critical element of moving toward assessing TCUs' success, their positive impact on communities, and their value in the larger scope of educating tribal/U.S. citizens.

## Critiques of Return on Investment

Countries use ROI metrics to determine if investments in education impact their macroeconomic goals, such as increasing gross domestic product and employment rates (Psacharopoulos & Patrinos, 2004). More recently, ROI metrics have been applied to individuals to determine if a college education will lead to earnings increases that outweigh the initial cost of college (Baum et al., 2013). While this information can be useful to policy makers and prospective college students, ROI analysis falls short in assessing the true value of education in many ways, as it has difficulty quantifying educational benefits, is unable to account for other external factors affecting educational outcomes, and comprises a solely economic outcomes focus that is insufficient to assessing the full breadth of educational impacts.

Many benefits of education are difficult to quantify. These noncognitive benefits, like critical thinking skills, improved self-esteem, leadership, community engagement, and life satisfaction, are not measured under current data collection practices (Soland, Hamilton, & Stecher, 2013). Research on ROI tends to focus on easily quantifiable data like unemployment rates and income. TCUs prioritize many difficult-to-quantify gains, such as community engagement, language revitalization, leadership, and cultural appreciation. Focusing too narrowly on the ROI of an institution may incentivize institutions to devote less energy to the difficult-to-quantify but equally important gains.

In addition, many external variables and inequalities influence ROI calculations. For example, gender, race, and parental earnings are all strongly correlated to differences in income (Baum et al., 2013; Hout, 2012). Therefore, institutions that primarily serve minorities, women, and low-income students, as TCUs do, tend to demonstrate a lower individual ROI than institutions that serve predominately White, male, affluent students—*regardless of institutional performance*—as a result of long-standing socioeconomic inequities. Until these social factors are mitigated, institutions should not be held responsible for the future earnings and other related outcomes of their graduates, especially institutions that serve nontraditional students.

Finally, focusing on purely economic ROI may not be in the best interest of society and individuals. Students may receive a valuable educational experience but forgo a lucrative career in favor of a lower-paying but more rewarding, service-oriented career. For example, a medical student with a deep commitment to working in underserved, low-income communities will make less than a medical student who chooses to start a practice in an affluent area. This argument is especially relevant to TCUs. TCUs aim to cultivate students with a deep commitment to their communities and community service and are also located in predominately low-income areas (IHEP, 2007). A TCU that fulfills its mission of cultivating students with a commitment to their communities would likely demonstrate a lower ROI than a TCU that does not instill this value and produces graduates who leave their communities for more lucrative positions. For this reason, focusing on individual economic ROI may be detrimental to the mission of TCUs and to the economic development of reservations.

The limitations of focusing on purely economic indicators of ROI demonstrate how critical it is for TCUs to adhere to a broad definition of ROI that embraces difficult-to-quantify social gains and their unique institutional missions. The next section addresses additional data challenges to determining ROI for TCUs and draw conclusions for moving forward on developing ROI metrics that are meaningful to TCUs.

## The Data Challenges for Assessing Outcomes for Tribal Colleges and Universities

Tribes and TCUs need data and evaluation for two purposes: (a) internally, to evaluate programs, set policy, decide where funds and efforts go, identify areas of need, and so on, and (b) externally, to receive outside funding, influence federal and other policies in their favor, tell their own story to others, meet funding needs while staying true to tribal interests, and so on. Unfortunately, there are significant barriers to utilizing data in such ways (Bruhn, 2014; Cross, Fox, Becker-Green, Smith, & Willeto, 2004; DeWeaver, 2013).

Assessing TCU outcomes, including ROI, requires data on students and others served, for example, enrollment, student success, degree attainment, graduates, and local population data such as socioeconomic status and health. Often, these data are of poor quality and do not resonate with tribal and TCU priorities (Bruhn, 2014; Cross et al., 2004; DeWeaver, 2010, 2013; Freemantle et al., 2015; Westat, 2007).

Most TCUs do not have the capacity or the time to collect a broad variety of data. Instead, they expend effort on data to fulfill grant and accrediting body requirements (HLC, 2013), in essence collecting and submitting data that meet other entities' needs and interests, including time frames and types of data collected. While many accreditation bodies have begun to include more culturally appropriate metrics (AIHEC, 2010; HLC, 2013), the data still do not always resonate with TCU and tribal outcomes. Chronic underfunding (see Figure 3.2) limits the capacity of TCUs to improve their data collection protocols, analyze the data they do collect, and identify and collect a broad variety of additional data.

Although the United States has a legal obligation to provide education to citizens of federally recognized American Indian tribes, in fiscal year 2013, Congress appropriated only $5,665 per Native American student per year (His Horse is Thunder, 2013). Congress did not appropriate any funds for non-native students, who account for about 20% of TCU enrollment. In addition to paltry congressional appropriations, when adjusted for inflation, TCU funding has decreased on average about 25% since the 1980s (IHEP, 2007). Although public funding for most community colleges and public universities has also declined, community colleges and universities often address decreased public funding by increasing tuition revenues (Finney, 2014). TCUs do not receive state higher education appropriations, and most tribes do not levy taxes because their populations have such high poverty rates (Fann, 2002; HLC, 2013). TCUs operate in low-income areas and serve communities deeply entrenched in poverty; therefore they keep tuition low to keep higher education accessible to the community (AIHEC, 2000; HLC, 2013; IHEP, 2007). For all these reasons, TCUs have lower per-student revenues than most mainstream institutions and most comparable rural community colleges (O'Laughlin, 2003). Securing an adequate and stable base-operating budget may be the most pressing challenge TCUs face.

**Figure 3.2** Chronic underfunding of tribal colleges and universities.

Tribes find themselves in a similar situation with population data. Others have defined and collected, for their own purposes, the socioeconomic and health information available to tribes (Bruhn, 2014; Cross et al., 2004; DeWeaver, 2010, 2013; Freemantle et al., 2015; Westat, 2007). However, these available data are not valid or reliable; generally do not align with tribal self-conceptions, needs, and priorities; and do not allow for comparisons over time or across locations or tribes (Figure 3.3; Bruhn, 2014; Cross et al., 2004; DeWeaver, 2010, 2013; Freemantle et al., 2015; Westat, 2007).

Tribal investments in TCUs vary depending on the needs of the TCU and the tribe's resources (HLC, 2013; C. Crazy Bull, personal communication, January 5, 2016). Support comes in the form of annual funding of the TCU; in-kind resources such as legal, financial, human resources, and facilities management; and TCU use of tribal facilities (HLC, 2013). In addition, tribes allow TCUs to utilize tribal grant and federal funds to operate tribal and community

programs, such as Head Start and libraries (C. Crazy Bull, personal communication, January 5, 2016). Regardless, the use of tribal funds and resources by TCUs stands as a call to tribes and TCUs to evaluate needs and outcomes via tribal, TCU, and mainstream methods, as appropriate, to guide investments.

**Figure 3.3** Tribal Investments in Tribal Colleges and Universities.

Existing data and TCU data reporting requirements do not match TCUs' dual missions and tribal conceptions. This limitation demonstrates a need for tribes and TCUs to develop a strategic plan to improve TCU outcome methodology and measurement and the data necessary to demonstrate to federal and other funders the ROI or positive impact of TCUs in tribal communities. Such an initiative should be tribally driven with support and funding from federal, mainstream accreditation, and other entities. An intentional, tribally determined data collection plan for TCUs and tribes would improve TCU and tribal capacity, allow TCUs to better respond to tribal and community needs, and ultimately enhance tribal sovereignty and self-determination (Cross et al., 2004; Schultz & Rainie, 2014).

## Moving Forward With Assessing Tribal Colleges' and Universities' Outcomes

The government-to-government relationship between tribes and the United States and the dual mission of TCUs necessitate a shift in the ROI discussion for TCUs. Instead of focusing on ROI for federal funds invested in TCUs as measured by mainstream ROI assessments, the conversation should center on aligning TCU outcome methods and measurements with TCU missions.

TCU missions to educate students *and* address tribal priorities require both adjustments to measures of individual and social outcomes and innovations in assessing outcomes associated with tribal priorities. Although addressing student outcomes and socioeconomic inequalities through TCU activities is important (IHEP, 2007), merely closing the gaps by reducing disparities between populations is not enough. This approach correctly notes that distinct populations — Native and mainstream students, minority and White students, and so on — have different outcomes, even when living in the same country, but it often operates without appropriate cultural awareness; its goal is to bring the educational or other health and social outcomes of the average member of some subpopulation into line with those of the dominant population. The conversation focuses on mainstream measurable outcomes, ignoring other motivations or needs of the subpopulation.

Additionally, different indigenous communities and TCUs may have different ideas of what constitutes positive educational outcomes, including measures of tribal culture, language use, and sovereignty. In addition, many Native communities have experienced markedly different social, political, and economic structural inequalities. This raises questions about what tribes and TCUs as well as outside funders and other supporting entities should be looking at when measuring TCU ROI. Should interests be limited to closing gaps in educational and socioeconomic indicators, or should more attention be paid to indigenous conceptions of TCU missions and the outcomes that resonate with those?

To answer this question, we suggest that TCUs and tribes strategically set their desired outcomes, or ROI, and assess their data needs to evaluate ROI in three categories: (a) TCU-specific data that are tribal, community, program, or mission-related; (b) cross-TCU-specific data, such as AIMS and AIMS AKIS; and (c) national-level data, such as those submitted for accreditation or to IPEDS.

## Recommendations

### Visioning for Return on Investment

The current concept of ROI that relies on mainstream higher education institution missions and values does not fully capture the dual missions of TCUs. To establish an ROI or outcome measurements that reflect TCU and tribal values and priorities, TCUs should define ROI specific to each TCU, across TCUs, and as a contribution to the broader U.S. society. These definitions should be based on the story that TCUs want to share with tribal citizens, the community, funders, and current and potential students. The TCU-defined ROI and outcomes of importance should also reflect the TCUs' dual missions. TCUs and tribes will need to carefully consider the following: What mainstream student

outcomes, socioeconomic indicators, and other data points reflect the TCUs' missions? What else do tribes need and TCUs want to know about TCUs' outcomes, impacts, and operations? What stories do the tribes and TCUs want and need to tell about TCU ROI? How can TCU stories reflect the contributions of tribal educational institutions in broader discussions about the value and success of higher education and the role of higher education in building a better society?

## Data

As TCUs engage in redefining ROI and other outcomes based on TCU and tribal values and TCUs' dual missions, TCUs must work to improve the data used to evaluate those outcomes. Data improvements are needed at the institutional, cross-TCU, and national levels. TCUs and tribes need to strategically conceptualize their data needs, thinking about what data are already collected by the TCUs as well as the data required by outside entities, and how the tribe and TCU will use those data. The primary consideration when planning for improvements in data collection, analysis, and use is how the data will be used to generate improvements to better meet tribal needs.

TCUs already collect data for accreditation, grants, programs, and other uses. What data do TCUS already collect, such as data for TCU programs, grant reporting, AIMS, AKIS, accreditation, or IPEDS? How do TCUs use the data? In what other ways can TCUs use data that they already collect to assess the outcomes and ROI that matter to TCUs and tribes? What is the quality of the data? How can data quality be improved? What other data sets can TCUs participate in, such as the National Student Clearinghouse (NSC)?

Cross-TCU-specific information includes AIMS and AKIS data. To allow TCUs to tell a national story of tribal higher education institutions and to assess TCU ROI and outcomes across institutions, more support should be directed at the AIMS and AKIS data and data processes. AIHEC, tribes, and TCUs need funding to invest in TCU capacity to collect, analyze, and use AIMS and AKIS data. Possible future capacity building includes training on AIMS and AKIS variable definitions to promote consistent interpretation and reporting of variables across TCUs, technical assistance to improve data quality via standardized data collection procedures, and mentoring of staff and students in data collection, storage, and analysis techniques.

Nationally, TCUs can collaborate with other TCUs, AIHEC, MSIs, and other predominantly White institutions to influence changes to data and collection methods for data sets, such as IPEDS, that increase the utility and quality of the national data for TCUs. TCUs, as an institution type, can collaborate to create accreditation measures that matter to TCUs, such as language revitalization and tribal civics. The challenge for TCUs as they establish TCU-specific accreditation metrics lies in establishing measurements that assess and demonstrate that the TCU has led to student growth in this knowledge. TCUs can also increase the ability to analyze and compare their own ROI and other outcomes with other TCUs and mainstream institutions by participating in national data sets such as the NSC.

## Conclusion

The current methods of computing ROI for educational institutions may not be entirely valid for evaluating educational outcomes and socioeconomic impacts. It is even less legitimate for TCUs. TCU and tribal conceptions of TCU outcomes and impacts may be markedly different from federal or other organizations' ideas. Instead, TCU outcome evaluation methods and measurements should match up with the values and missions of TCUs and tribes.

However, even if TCUs transcend the ROI discussion to evaluate indigenously defined student and other outcomes, poor data for TCUs and tribal communities in the United States today hinder the assessment of TCUs' dual mission of educating students and addressing tribal priorities. Tribes and TCUs need to work to improve data, both locally and nationally. The federal government and other funders must support this data agenda by increasing funding of TCUs; allocating monies toward establishing data infrastructure, systems, and capacities; and promoting collaborative work to improve federal and other data. Investment in TCUs is critical to changing the outcomes that matter most to tribes, TCUs, outside funders, and the broader U.S. society.

Finally, nation-based, tribally driven solutions to TCU curricula and evaluation serve to increase sovereignty, revitalize culture, and, ultimately, create programs and offerings that meet the dual missions of TCUs to educate and prepare a workforce while promoting tribal culture and values.

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## 4. A Return on Investment Analysis for Black Graduates of Historically Black Colleges and Universities: Insights From Three Studies

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Analyzing data from three separate studies, the author presents new information demonstrating the significant return on investment (ROI) for Black graduates of our nation's historically Black colleges and universities. Study 1 uses advanced statistical modeling to show that Black graduates of HBCUs assume higher status occupations than their same-race peers at predominantly White institutions (PWIs) but Black graduates of PWIs earn higher annual salaries in their first job. Study 2 uses data from the *National Survey of Black Americans* to assess differences between Black graduates of HBCUs and PWIs, adding racial identity, life satisfaction and other social psychological long-term outcomes to the model. Results show consistent differences between these groups in terms of racial identity, which may be attributed to HBCU attendance. Study 3 draws upon one-on-one interviews with Black HBCU graduates to tell their story about ROI and long-term benefits of college attendance.

**Keywords** College impacts; African American; HBCU; earnings; status

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### Background to the Core Issues

College enrollment rates have increased for all groups over the last 30 years. Today, approximately 18 million students are enrolled in postsecondary degree-granting institutions, compared to only 11 million in 1976—an increase of approximately 64% in just three decades (National Center for Education Statistics [NCES], 2006b). Furthermore, more women and students of color enroll in college today than ever before. Yet significant gaps across racial/ethnic groups persist. For example, while upward of 75%–80% of White students enroll in college immediately following high school graduation, only 35%–50% of African American[5] students do so. And when they do enroll, African Americans tend to be concentrated in less selective 4-year institutions, 2-year community colleges, and minority-serving institutions (MSIs) such as historically Black colleges and universities (HBCUs; Baum & Payea, 2004; Strayhorn & Hirt, 2008; Thomas & Perna, 2004).

Not only is there evidence of gaps across groups but some researchers have also studied within-group differences. For instance, one line of scholarly inquiry focuses on disparities in the postbaccalaureate (post-BA) outcomes of African Americans who attended predominantly White institutions (PWIs) and their same-race counterparts at HBCUs. Although "much of the research on the effects of college suggests that earning a bachelor's degree significantly influences one's economic success and labor market outcomes such as earnings, job security, and prestige of one's occupation" (Strayhorn, 2008, p. 28), prior research conclusions that compare Blacks at PWIs to Blacks at HBCUs are equivocal and oftentimes contradictory (Allen, 1992; Constantine, 1994, 1995; Ehrenberg & Rothstein, 1994; Fitzgerald, 2000; London, 1998; Solnick, 1990; Thomas, 2000). For example, Ehrenberg and Rothstein (1994) analyzed national data and found that attending a HBCU had a negligible effect on subsequent occupational status and earnings, controlling for gender, *SAT*® test scores, high school rank, educational attainment, and a number of other confounding influences. Conversely, Constantine (1994, 1995) studied African Americans at 4-year institutions and found that attendance at a HBCU versus a PWI had

**Table 4.1** Description of the Sample

| Characteristic/variable | % |
|---|---|
| Father's educational attainment | |
| Not high school graduate or equivalent | 8.0 |
| High school graduate or equivalent | 30.2 |
| Some postsecondary, <2 years | 8.6 |
| 2 years of postsecondary, less than bachelor's degree | 13.6 |
| Bachelor's degree | 21.0 |
| Advanced degree | 18.6 |
| Mother's educational attainment | |
| Not high school graduate or equivalent | 6.4 |
| High school graduate or equivalent | 33.6 |
| Some postsecondary, <2 years | 24.8 |
| 2 years of postsecondary, less than bachelor's degree | 8.1 |
| Bachelor's degree | 17.0 |
| Advanced degree | 10.1 |
| Gender | |
| Male | 33.3 |
| Female | 66.7 |
| HBCU graduate | |
| No | 67.0 |
| Yes | 33.0 |
| Graduate school enrollment | |
| No | 69.4 |
| Yes | 30.6 |

*Note*. HBCU = historically Black college or university.

a statistically significant positive effect on graduates' earnings, controlling for a battery of individual-level characteristics such as high school achievement and gender.

As another example, I previously analyzed national data (Strayhorn, 2008) on African American college graduates to study the influence of racial campus composition (i.e., HBCU vs. PWI) on three measures of post-BA labor market outcomes—not just earnings but also job satisfaction and occupational status. I found compelling evidence that HBCU attendance was associated with lower annual salary or earnings and higher occupational status and that it yielded no influence on job satisfaction. Rather than arguing that HBCUs confer an earnings disadvantage or what J. Riley (2010) calls a *wage penalty* on Black graduates, the analysis seemed to reveal ways in which employers' preferences and other workplace discriminatory practices negatively affect Blacks who earn college degrees from HBCUs that may be less well known or valued in the mainstream compared to larger PWIs.

Despite use of a methodologically rigorous research design, widely used nationally representative data, and statistical controls for confounding influences, concerns were raised among some leaders of several national HBCU-serving organizations that the observed inequities were due, in part, to differences in institutional factors such as institutional control and quality (B. Daniels, personal communication, February 3, 2015). However, to date, comparatively few researchers have studied the role that institutional selectivity plays in explaining disparities in student outcomes among African American college graduates. The first study presented as part of this ROI analysis responds to the concerns expressed by these national organization leaders and addresses this important gap in our current literature. Figure 4.1 is a diagram that represents the underlying assumptions guiding the ROI analyses featured in Strayhorn (2008).

## Study 1: Institutional Selectivity and Labor Market Disparities Among African American College Graduates—A National Study

### Purpose

The purpose of the study was to measure differences in the post-BA outcomes of African American college graduates who attended PWIs and their same-race peers at HBCUs. Using data from the NCES *Baccalaureate and Beyond Longitudinal Study: 1993/97 Second Follow-Up Methodology Report* (B&B:93/97; NCES, 1999),[6] this study seeks to answer the following research questions:

**Table 4.2** Means and Standard Deviations of Independent and Dependent Variables

| Independent variable | *M* | *SD* |
|---|---|---|
| Gender | 0.67 | 0.47 |
| Age | 26.25 | 7.82 |
| Family income | 39,159.12 | 10,031.90 |
| Mother's level of education | 3.08 | 1.48 |
| Father's level of education | 3.19 | 1.63 |
| Type of high school | 1.30 | 0.75 |
| Marital status | 4.04 | 2.35 |
| Education aspirations | 4.06 | 1.36 |
| GPA | 273.22 | 56.38 |
| Hours worked | 19.24 | 15.05 |
| ACT score | 20.89 | 3.51 |
| SAT score | 897.32 | 164.23 |
| Control | 1.41 | 0.53 |
| Associate's degree | 0.11 | 0.32 |
| Major: Specialized hard | 0.17 | 0.38 |
| Major: Broad professional | 0.15 | 0.36 |
| Major: Liberal arts | 0.23 | 0.42 |
| Attend graduate school | 0.31 | 0.46 |
| Institutional selectivity | 1.67 | 0.27 |
| Attend HBCU | 0.33 | 0.47 |
| Annual salary | $30,842.62 | 14,849.69 |
| SEI | 58.48 | 22.82 |
| Satisfaction | 20.82 | 3.70 |
| Weighted *N* | 71,831 | |

*Note*. GPA = grade point average. HBCU = historically Black college or university. SEI = socioeconomic index.

1. Are there differences among HBCU and non-HBCU African American college graduates in terms of three measures of labor market outcomes, controlling for differences in institutional selectivity as measured by *Barron's Profiles of American Colleges*?
2. What is the net effect of attending a HBCU on the post-BA earnings of African American college graduates, controlling for an extensive array of confounding influences and differences in institutional selectivity?
3. What is the net effect of attending a HBCU on the post-BA occupational status of African American college graduates, controlling for an extensive array of confounding influences and differences in institutional selectivity?
4. What is the net effect of attending a HBCU on the post-BA job satisfaction of African American college graduates, controlling for an extensive array of confounding influences and differences in institutional selectivity?

## Significance of the Study

The present study is significant for at least one of three reasons. First, this study represents the second in a series of papers about the post-BA labor market outcomes of African American collegians (e.g., Strayhorn, 2008). Although Zhang (2005a) examined the effect of college quality, as defined by Integrated Postsecondary Education Data System (IPEDS) institutional control and a selectivity index, on college graduates' earnings, his analysis was limited to college quality, used alternative measures of selectivity and college graduates' earnings (not occupational status and job satisfaction, which are two other important labor market outcomes), and included students across all racial/ethnic subgroups. By including African Americans only, who tend to differ significantly from their non-Black counterparts in terms of precollege characteristics, academic experiences, and even the campus type or dominant racial composition of the undergraduate college attended (e.g., HBCU; Fleming, 1984; Flowers, 2002), I attempt to advance this line of inquiry in terms of isolating the net impact of HBCU graduation on labor market outcomes for a racially homogenous sample, thereby reducing the potential inflation of parameter estimates.

Second, this analysis differs from prior research in a number of ways. Prior research consists largely of single-institution or small student samples (Constantine, 1994, 1995), samples from a single employment sector (Solnick, 1990), and even samples from single states (Johnson, 1982). In contrast, this analysis was based on nationally representative data drawn from a large-scale survey of students from multiple institutions and across various academic disciplines.

**Table 4.3** Summary of Model Predicting Earnings From Background, Precollege, College, and Related Variables

| Variable | *B* | *SE B* | β | *t* | *p* |
|---|---|---|---|---|---|
| (Constant) | 13,761.99 | 7,080.57 | | 1.94 | 0.05 |
| Gender | −2,432.39 | 1,214.61 | −0.07 | −2.00 | 0.05 |
| Age | 417.43 | 60.78 | 0.27 | 6.87 | 0.01 |
| Father's education | −179.74 | 427.12 | −0.02 | −0.42 | 0.67 |
| Mother's education | 668.26 | 477.82 | 0.06 | 1.40 | 0.16 |
| Marital status | 726.31 | 145.51 | 0.20 | 4.99 | 0.01 |
| High school type | 1,249.60 | 883.86 | 0.05 | 1.41 | 0.16 |
| Family SES | −0.03 | 0.06 | −0.02 | −0.61 | 0.55 |
| Educational aspirations | −84.04 | 369.52 | −0.01 | −0.23 | 0.82 |
| College GPA | −13.12 | 12.93 | −0.04 | −1.02 | 0.31 |
| Hours worked | 75.12 | 41.96 | 0.07 | 1.79 | 0.07 |
| ACT score | 159.77 | 174.85 | 0.03 | 0.91 | 0.36 |
| SAT score | 2.05 | 3.70 | 0.02 | 0.55 | 0.58 |
| Institutional control | 864.38 | 1,180.23 | 0.03 | 0.73 | 0.47 |
| Associate's degree | −532.35 | 1928.67 | −0.01 | −0.28 | 0.78 |
| Specialized hard major | 3,577.46 | 1,706.36 | 0.08 | 2.10 | 0.04 |
| Broad professional major | 4,639.73 | 1,767.39 | 0.10 | 2.63 | 0.01 |
| General liberal arts major | −264.76 | 1,563.69 | −0.01 | −0.17 | 0.87 |
| Attend graduate school | 1,498.14 | 1,309.37 | 0.04 | 1.14 | 0.25 |
| *Barron's* selectivity index | 1,036.81 | 2,201.73 | 0.02 | 0.47 | 0.64 |
| Graduate from HBCU | −2,934.73 | 1,302.54 | −0.08 | −2.25 | 0.03 |
| *R* | 0.24 | | | | |
| $R^2$ | 0.06 | | | | |

*Note*. *B* = regression weight. GPA = grade point average. HBCU = historically Black college or university. SES = socioeconomic status. β = standardized regression weight.

Third, previous studies have tended to examine the outcomes of college using unadjusted prediction models or "flat analytical techniques without statistical controls" (Strayhorn, 2008, p. 31). The absence of statistical controls proves problematic (Keith, 2006), potentially biasing the estimates of the effects upward by not accounting for the confounding influences of other independent variables (e.g., age, sex, academic major). In the present study, I employ an extensive array of statistical controls for potentially confounding variables to isolate the net impact of HBCU graduation on labor market outcomes disparities among Blacks, with a particular emphasis on controlling for differences in institutional selectivity as measured by *Barron's Profiles of American Colleges* (2005, see also Brewer & Ehrenberg, 1996, Brewer, Eide, & Ehrenberg, 1999).

Finally, this study is grounded in widely cited theoretical perspectives. For instance, in this investigation, I employed a blended theoretical framework consisting of college impact theory and notions drawn from social and cultural capital theories to estimate relationships among all factors and to justify the selection or elimination of variables (and proxies) included in the statistical model.

## Methods

The present study is part of a larger research program that centers on issues of access, retention, and success for historically underrepresented students, especially racial/ethnic and economic minorities, in higher education.

### *Data Source*

Data were drawn from the NCES's B&B study. The B&B study follows baccalaureate degree completers over time to provide information on work experiences after college and post-BA outcomes such as earnings. Using the 1993 National Postsecondary Student Aid Study (NPSAS) sample as the base year, the B&B:93/97 Longitudinal Study follows baccalaureate degree completers beyond their undergraduate graduation (NCES, 1999). This is particularly useful for studying the effect of college on post-BA labor market outcomes such as annual earnings. In addition, given that the maximum economic return is associated with actually graduating from college (Murphy & Welch, 1989; Rupert,

**Table 4.4** Summary of Model Predicting Occupational Status Attainment From Background, Precollege, College, and Related Variables

| Variable | *B* | *SE B* | β | *t* | *p* |
|---|---|---|---|---|---|
| (Constant) | 16.77 | 10.98 | | 1.53 | 0.13 |
| Gender | 2.28 | 1.88 | 0.04 | 1.21 | 0.23 |
| Age | 0.29 | 0.09 | 0.11 | 3.12 | 0.00 |
| Father's education | −0.55 | 0.66 | −0.03 | −0.83 | 0.41 |
| Mother's education | −0.55 | 0.74 | −0.03 | −0.74 | 0.46 |
| Marital status | 3.36 | 0.23 | 0.53 | 14.88 | 0.00 |
| High school type | 0.73 | 1.37 | 0.02 | 0.53 | 0.60 |
| Family SES | 0.01 | 0.01 | 0.05 | 1.42 | 0.16 |
| Educational aspirations | 1.26 | 0.57 | 0.07 | 2.20 | 0.03 |
| College GPA | 0.02 | 0.02 | 0.04 | 1.10 | 0.27 |
| Hours worked | 0.03 | 0.07 | 0.01 | 0.38 | 0.70 |
| ACT score | −0.34 | 0.27 | −0.04 | −1.25 | 0.21 |
| SAT score | −0.01 | 0.01 | −0.02 | −0.56 | 0.58 |
| Institutional control | 0.36 | 1.82 | 0.01 | 0.20 | 0.84 |
| Associate's degree | −1.69 | 2.99 | −0.02 | −0.57 | 0.57 |
| Specialized hard major | −1.84 | 2.64 | −0.02 | −0.69 | 0.49 |
| Broad professional major | −8.20 | 2.74 | −0.10 | −2.99 | 0.00 |
| General liberal arts major | −3.82 | 2.43 | −0.06 | −1.57 | 0.12 |
| Attend graduate school | 5.96 | 2.03 | 0.09 | 2.94 | 0.00 |
| *Barron's* Institutional selectivity | 7.72 | 3.41 | 0.07 | 2.26 | 0.02 |
| Graduate from HBCU | 4.51 | 2.02 | 0.07 | 2.23 | 0.03 |
| *R* | 0.62 | | | | |
| $R^2$ | 0.38 | | | | |

*Note*. *B* = regression weight. GPA = grade point average. HBCU = historically Black college or university. SES = socioeconomic status. β = standardized regression weight.

Schweitzer, Serverance-Lossin, & Turner, 1996; Turner & Bowen, 1990), this data source was most appropriate as it provides longitudinal information on a national sample of recent college graduates.

The follow-up surveys provide a unique opportunity to gather information concerning delayed entry into graduate education, graduate school aspirations, persistence, and the interaction between work and education experiences beyond obtaining a bachelor's degree (NCES, 1999). The first-year follow-up report (B&B:93/94; National Center for Education Statistics, 1996) surveys BA recipients 1 year after receiving their college degrees, while the second follow-up (B&B:93/97; NCES, 1999) elicits information about participants 4 – 5 years after college graduation. The second set of follow-up data was deemed appropriate for this investigation and has been used in previous studies to explore the decision to enroll in graduate school (Perna, 2000, 2004) and graduate student persistence (Strayhorn, 2005).

### *Analytic Sample*

The total sample consisted of 9,274 respondents representing 83% of the original sample. For this analysis, the sample was restricted to African American students only. The weighted sample size (explained in the next section) was 71,831. The majority were women (67%), and 33% graduated from a HBCU, whereas 67% did not. Table 3.1 presents additional information to describe the sample.

### *Variables*

The dependent variables in this study are measures of labor market outcomes, namely, annual earnings, occupational status attainment, and job satisfaction. Specifically, one dependent variable measured the annual salary (in dollars) of recent college graduates as reported on the B&B survey. Occupational status attainment (the second dependent variable) was measured by converting each individual's occupational code to a measure of occupational status attainment as defined by Duncan (1961) and later revised by Featherman and Stevens (1982). That is, each occupational code was assigned a socioeconomic index (SEI) based on extensive research on occupational status (see Featherman & Stevens, 1982, for a full discussion of the socioeconomic index). These variables are consistent with techniques used in previous studies (Ehrenberg & Rothstein, 1994; Lin & Vogt, 1996; Smart, 1986; Trusheim & Crouse, 1981).

**Table 4.5** Summary of Model Predicting Job Satisfaction From Background, Precollege, College, and Related Variables

| Variable | *B* | *SE B* | β | *t* | *p* |
|---|---|---|---|---|---|
| (Constant) | 19.49 | 1.69 | | 11.54 | 0.00 |
| Gender | −1.07 | 0.29 | −0.15 | −3.70 | 0.00 |
| Age | −0.00 | 0.01 | −0.01 | −0.17 | 0.86 |
| Father's education | −0.08 | 0.10 | −0.03 | −0.76 | 0.45 |
| Mother's education | 0.08 | 0.11 | 0.03 | 0.65 | 0.51 |
| Marital status | −0.04 | 0.04 | −0.06 | −1.25 | 0.21 |
| High school type | 0.09 | 0.21 | 0.02 | 0.41 | 0.68 |
| Family SES | 0.01 | 0.00 | 0.04 | 1.01 | 0.32 |
| Educational aspirations | −0.04 | 0.09 | −0.02 | −0.47 | 0.64 |
| College GPA | 0.01 | 0.00 | 0.11 | 2.75 | 0.01 |
| Hours worked | 0.02 | 0.01 | 0.08 | 1.91 | 0.05 |
| ACT score | 0.03 | 0.04 | 0.02 | 0.61 | 0.54 |
| SAT score | −0.01 | 0.00 | −0.08 | −1.96 | 0.05 |
| Institutional control | −0.21 | 0.28 | −0.03 | −0.76 | 0.45 |
| Associate's degree | 0.19 | 0.46 | 0.02 | 0.41 | 0.68 |
| Specialized hard major | 0.24 | 0.41 | 0.03 | 0.60 | 0.55 |
| Broad professional major | −0.18 | 0.42 | −0.02 | −0.44 | 0.66 |
| General liberal arts major | −0.19 | 0.37 | −0.02 | −0.51 | 0.61 |
| Attend graduate school | 0.07 | 0.31 | 0.01 | 0.23 | 0.82 |
| *Barron's* institutional selectivity | 0.24 | 0.53 | 0.02 | 0.46 | 0.65 |
| Graduate from HBCU | 0.14 | 0.31 | 0.02 | 0.45 | 0.66 |
| *R* | 0.24 | | | | |
| $R^2$ | 0.06 | | | | |

*Note*. *B* = regression weight. GPA = grade point average. HBCU = historically Black college or university. SES = socioeconomic status. β = standardized regression weight.

**Table 4.6** Group Mean Scores on Black Identity Index, Historically Black College or University Versus Predominantly White Institution

| Group | *M* | *SD* |
|---|---|---|
| PWI | 3.15 | 0.49 |
| HBCU/PBI | 3.34 | 0.50 |
| Total | 3.25 | 0.50 |

*Note*. Groups were combined in the NSBA database. HBCU/PBI = historically Black college or university/predominantly Black institution. PWI = predominantly White institution.

For the purposes of this study, job satisfaction (the third dependent variable) was defined as the degree of pleasure or happiness derived by employees from their work, work relations, and work-related factors such as salary, fringe benefits, working conditions, opportunity for advancement, and job security (Fisher, 2000; Mau & Kopischke, 2001; Price & Mueller, 1986). Theoretically speaking, job satisfaction is based on the degree of congruence between an individual's skills and aspirations and the perceived or actual nature of the job (Bretz & Judge, 1994). Specifically, job satisfaction[7] was measured using an index or composite with adequate reliability (α = .80) composed of nine variables from the B&B:93/97 database. Similar variables were used in previous research and were deemed appropriate for the current analysis (Mau & Kopischke, 2001).

The independent variables consist of five sets of predictors. The first set includes background traits and precollege characteristics. These include gender, age, family income, mother's educational attainment, father's educational attainment, type of high school attended, precollege ability as measured by college entrance exam scores, and educational aspirations. Educational aspirations were measured using four categories ranging from less than BA to advanced degree. Parental educational attainment was measured by six categories: less than high school, high school, some postsecondary education, less than BA, bachelor's degree, and advanced degree.

The second and third set of predictors included institutional characteristics and academic factors, respectively. Institutional characteristics included campus racial composition, college selectivity, and institutional control. A single dichotomous variable was created to indicate campus racial composition with scores recorded as 0 (*PWI*) and 1

**Table 4.7** Results of Final Regression Model for Black Identity Index

| Model/variable | *B* | *SE* | β |
|---|---|---|---|
| 1 | | | |
| Constant | 3.27 | 0.10 | – |
| Sex | −0.01 | 0.06 | −0.00 |
| 2 | | | |
| Constant | 3.20 | 0.10 | – |
| Sex | −0.00 | 0.06 | −0.00 |
| HBCU/PWI | 0.14 | 0.05 | 0.15 |

*Note. B* = unstandardized beta. HBCU/PWI = historically Black (or predominantly Black) college or university/predominantly White institution. β = standardized beta.

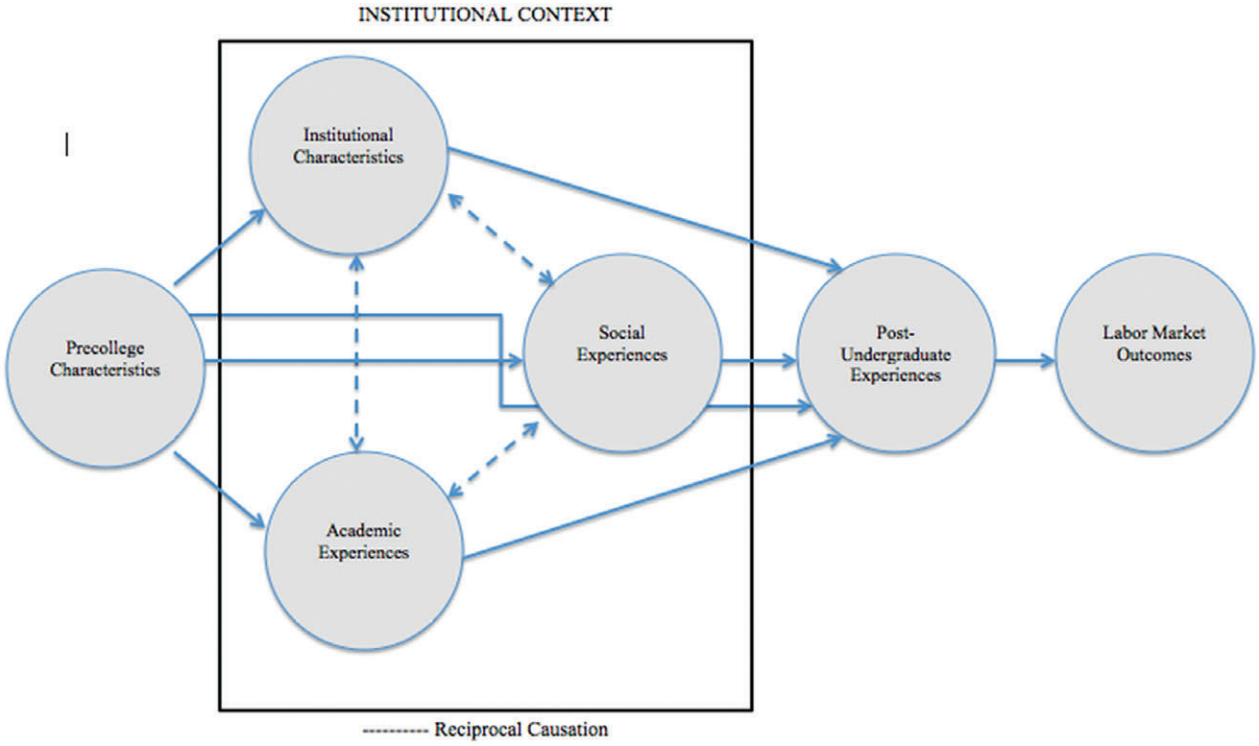


**Figure 4.1** Conceptual model of labor market outcomes.

(*HBCU*). College selectivity was measured according to information from *Barron's Profiles of American Colleges*. Barron's rating categorizes institutions into six selectivity groups on the basis of entering students' class rank, high school grade point average (GPA), and average SAT scores and on the percentage of applicants admitted. Scores ranged from 5 (*most competitive*) to 0 (*noncompetitive*). In addition, I extracted institutional control data (i.e., public vs. private) from IPEDS.

Academic variables included college GPA, associate's degree attainment, and undergraduate academic major. Major was operationalized using a set of four dichotomous variables indicating whether one's major was classified as specialized hard, specialized soft, broad professional, or general liberal arts. This conceptualization was also used in Sagen, Dallam, and Laverty's (1997) study. Finally, nonacademic experiences and post-BA experiences were included in the model. Nonacademic experiences refer to the hours worked per week, whereas post-BA experiences include participation in graduate education and marital status. Precedent for using these variables to estimate the net impacts of college attendance on student-level outcomes was set in previous studies (Ehrenberg & Rothstein, 1994; Lin & Vogt, 1996; Pascarella & Smart, 1990; Strayhorn, 2008). Table 4.2 presents descriptive statistics for all variables included in the analysis.

### *Data Analysis*

Several analytical procedures were used to investigate the research questions. First, descriptive statistics were computed to characterize the sample and to distinguish those who graduated from HBCUs from those who did not. Second, analysis of covariance (ANCOVA) tests were used to determine differences between these two groups on three labor market outcome measures, controlling for differences in institutional selectivity. ANCOVA is an appropriate technique for "subtract[ing] statistically the effects of a variable to see what a relationship [i.e., comparison of group means] would be without it" (Vogt, 1999, p. 56).

Lastly, hierarchical linear regression techniques were used to measure the influence of such factors on three measures of labor market outcomes, namely, annual earnings, occupational status attainment, and job satisfaction. Hierarchical regression analysis is "a method of regression analysis in which independent variables are entered into the regression equation in a sequence specified by the researcher in advance" (Vogt, 1999, p. 129). Accordingly, independent variables were entered into the statistical model proceeding from precollege and background traits to college experiences (academic and nonacademic) and institutional factors to post-BA experiences. The independent variable of interest, whether a student graduated from a HBCU, was entered in the last and final model. This statistical design permitted the use of a rigorous set of statistical controls and isolated the net effect of individual sets of predictors on the dependent variable(s) under study; by net effect, I mean the statistical relationship between a variable or set of variables ($X$) on a dependent ($Y$), subtracting all other effects.

### *Weighting and Technical Issues*

While the instruments used for both the NPSAS and the B&B surveys were found to be reliable through field testing and follow-up studies, adjustments must be made to compensate for "unequal probability of selection into the B&B sample and to adjust for non-response" (NCES, 1999, p. 108). Owing to the complex sampling design, appropriate sampling weights must be applied when approximating the population of the 1992–1993 bachelor's degree recipients in the longitudinal sample. The B&B:93/97 panel weight is appropriate for this purpose and was applied to provide national probability estimates adjusted for differential rates of selection and nonresponse. To "minimize the influence of sample sizes on standard errors while also correcting for the over sampling of some groups, each case is weighted by the panel weight divided by the average weight for the sample [the relative weight]" (Perna, 2004, p. 492).

All statistical analyses were conducted using *AM* Version 0.06.03 beta software provided by the American Institutes for Research (2002), which is appropriate for use with weighted data from large-scale, complex samples. In addition, owing to the nested nature of these data, a more rigorous threshold of statistical significance, $p < .01$, was used to interpret the results where possible (Thomas & Heck, 2001).

## Limitations

Despite the adjustments described earlier, there are several limitations that should be discussed before presenting the results of this analysis.

Some analyses in this study are limited by the magnitude of missing data. Variables with the largest share of missing data are those pertaining to family income, salary, and age, although all variables in the study were missing less than 10% of cases. In some cases, listwise deletion would reduce the analytic sample significantly and possibly result in a sample that is not representative of the population of 1992–1993 bachelor's degree recipients. Therefore I considered options for preserving statistical power (Cohen, 1977).

Although researchers disagree on the minimum number of cases that is required per independent variable, most generally agree that larger samples will generate more stable parameter estimates and more accurate chi-square distributions (Peng, So, Stage, & St. John, 2002). To avoid the substantial reduction in sample size that would occur during listwise deletion of missing data, and to account for the tendency of cases to be missing data for more than one independent variable, I took several steps to reduce the number of missing cases (Cohen & Cohen, 1983). First, scores were imputed for cases that were missing data on continuous independent variables using a series of linear interpolations. Although these data were imputed to minimize the effects of missing data, this procedure may result in an underestimation of standard errors by 10%–20% and increase the chances of making a Type 1 error. Therefore a more rigorous threshold of statistical significance, $p < .01$, was used when interpreting such results.

Some cases were missing data on scale variables. In that event, I used trend equations (Thomas & Heck, 2001) to impute values for the missing cases. Trend equations act much like regression equations and predict missing values using data provided on valid cases in the sample. Predicted values were imputed for all missing cases on scale items, except when missing values constituted no more than 1% of all cases.

It is important to note that linear imputation of values in place of missing observations was used only for continuous independent variables, whereas trend calculations were used to impute values for missing observations on survey scale items with restricted ranges. Missing cases for the dependent variables were excluded from the analysis, as recommended by others (Galloway, 2004; Perna, 2004).

## Results

ANCOVAs were conducted to evaluate the relationship between campus racial composition (i.e., attending a HBCU vs. a PWI) and three measures of labor market outcomes, controlling for differences in institutional selectivity. The ANCOVA was significant for annual earnings, $F(2, 662) = 5.54$, $p < .01$; that is, the strength of the relationship between campus racial composition and annual earnings was statistically significant at the .01 level, holding constant one's undergraduate institution's level of selectivity. Similar results were found for occupational status (i.e., SEI), $F(2, 662) = 4.57$, $p < .01$. However, no statistically significant results were found for job satisfaction, $F(2, 662) = 0.15$, $p = n.s.$

A hierarchical linear regression analysis was conducted to estimate the net effect of HBCU attendance on African American college graduates' post-BA annual earnings, as reported in 1997. The final hierarchical regression model was found to be significant overall, $F(21, 643) = 7.48$, $p < .01$. The sample multiple correlation coefficient was .44, indicating that approximately 20% of the variance in earnings can be explained by the linear combination of independent and control variables. Results indicate that several variables are significant predictors of annual earnings: gender, age, marital status, specialized hard major, broad professional major, and HBCU. And, perhaps surprisingly, results suggest that differences between HBCU and non-HBCU African Americans persist in the presence of a powerful set of statistical controls. Relative standardized regression weight comparisons suggest that age, marital status, and broad professional major have the stronger influences on earnings. Results from the final model are reported in Table 4.3.

A hierarchical linear regression analysis was conducted to estimate the net effect of HBCU attendance on African American college graduates' post-BA occupational status, as measured by a conventional socioeconomic index. The final hierarchical regression model was found to be significant overall, $F(21, 643) = 18.67$, $p < .01$. The sample multiple correlation coefficient was .62, indicating that 38% of the variance in occupational status can be explained by the linear combination of independent and control variables. Interpretation of the parameter estimates indicates that several variables are significant predictors of occupational status: age, marital status, educational aspirations, enrollment in graduate school, and institutional selectivity. Furthermore, relative standardized regression weight comparisons suggest that age, marital status, broad professional major, and graduate school attendance have the greatest influence on occupational status for the sample. Differences in occupational status between HBCU and non-HBCU African American graduates persist in the face of an extensive array of statistical controls. Results from the final model are reported in Table 4.4.

A hierarchical linear regression analysis was conducted to estimate the net effect of HBCU attendance on African American college graduates' post-BA job satisfaction, as reported in 1997. The final hierarchical regression model was found to be significant overall, $F(21, 643) = 1.94$, $p < .01$. The sample multiple correlation coefficient was .24, indicating that approximately 6% of the variance in job satisfaction can be explained by the linear combination of independent and control variables. Results indicate that several variables are significant predictors of job satisfaction: gender, GPA, hours spent working while enrolled, and SAT score. Results from the final model are reported in Table 4.5.

Lastly, I conducted follow-up tests to check for multicollinearity. Multicollinearity exists when "one independent variable is a near linear combination of other independent variables" (Keith, 2006, p. 199) or a complex correlational relationship exists among many variables. This makes it difficult, if not impossible, to determine the direct effects on the dependent variable (Vogt, 1999). Results suggest that collinearity was not a problem for this investigation as all tolerance values approach 1 (range from .79 to .98), indicating near-complete independence (Cohen, Cohen, West, & Aiken, 2003).

## Discussion

Building on my previous study (Strayhorn, 2008), this analysis employed a hierarchical design with statistical controls for potentially confounding influences to estimate the net impact of attending a HBCU on three measures of labor market outcome using a national sample of African American college graduates. Specifically, in this study, I considered the role that institutional selectivity, as measured by *Barron's Profiles of American Colleges*, plays in mediating this relationship. Findings suggest a number of important conclusions. Overall, HBCU and non-HBCU African American graduates differ significantly on post-BA annual earnings and occupational status but not on job satisfaction. Still, a number of important nuances should be highlighted.

Attending a HBCU is associated with lower levels of annual salary for African American college graduates. These results are consistent with findings reported elsewhere (Ehrenberg & Rothstein, 1994; Fitzgerald, 2000; Strayhorn, 2008; Thomas, 2000). However, they are inconsistent with conclusions drawn in Constantine's (1995) study; she found that HBCU attendance exerts a positive influence on subsequent wages. While the weight of evidence suggests that African American HBCU graduates earn lower annual salaries, on average, than their non-HBCU counterparts, additional research is needed to test whether this relationship holds across different databases, measures of earnings, and student subpopulations.

Second, contrary to popular belief and the opinions expressed by national agency leaders upon publication of the first manuscript (Strayhorn, 2008) and critics like J. Riley (2010) and Vedder (2010), economic inequities persist between HBCU and non-HBCU African American college graduates even after "subtracting out" the effect of institutional selectivity/quality on the outcome. And while the results present compelling evidence of the impact of HBCU attendance on annual earnings, far less is revealed about the causal mechanism underlying this relationship. As I argued previously, these results "may provide evidence of employers' [biased] preferences for non-HBCU graduates rather than an actual negative 'effect' that HBCUs confer upon their students" (Strayhorn, 2008, p. 47). Indeed, countless studies have shown that attending HBCUs has a positive effect on African American students in terms of cognitive and affective outcomes (Berger & Milem, 2000), racial ideology (Cokley, 1999), racial identity (McCowen & Alston, 1998), and even racial uplift (Hirt, Strayhorn, Amelink, & Bennett, 2006). Thus readers should exercise caution when interpreting this finding. Rather than blaming HBCUs, I encourage readers and policy makers to focus on factors over which we have some programmatic and policy control, such as employer bias, degree offerings, financial investment in HBCUs, and Black students' ability to negotiate competitive salaries.

Third, institutional selectivity was not a significant predictor of annual earnings for African American college graduates. In other words, all other things being equal, African American college graduates earn comparable salaries regardless of the selectivity level (or quality) of their undergraduate institution. Although statistically nonsignificant, this finding has some practical significance, as most studies underscore the important role that institutional quality plays in predicting post-BA outcomes (e.g., Zhang, 2005a). So why might African American college graduates from highly selective institutions earn salaries comparable with their same-race peers at less selective institutions? Future research should take up this issue, as it may provide evidence of the link between race and economic inequities in the labor market. It may be the case that employers and supervisors give more attention to race, age, gender, marital status, and major than the quality of one's undergraduate institution. Of course, at least one other explanation exists to explain this finding—employers may be unaware of institutional quality, and therefore salary decisions are made without reference to this factor.

Fourth, consistent with previous research (Ehrenberg & Rothstein, 1994; London, 1998; Strayhorn, 2008), attending a HBCU was associated with higher occupational status in the present study. Specifically, findings suggest that African American college graduates who have similar educational and personal histories, who are the same with respect to age and marital status, who share similar levels of social and cultural capital, and who attend comparable undergraduate institutions are more likely to assume high-status occupations if they attend a HBCU. Indeed, this is good news for HBCUs and lends powerful support to their continuing significance (Strayhorn & Hirt, 2008). As I argued in the earlier work, this finding may reflect that HBCUs continue to produce "the vast majority of Black professionals and those who the Black community and society in general have acknowledged as 'Black leaders'" (Barthelemy, 1984, p. 14). Federal agencies, policy makers, and private philanthropists should consider these results in light of recent imperatives to increase the number of racial/ethnic minorities (e.g., African Americans) in highly specialized scientific occupations (e.g., biologist, chemist, engineer) and professional fields such as business, law, and medicine, which are typically classified as high-status occupations (Brown & Davis, 2001). According to information presented herein, HBCUs represent an important pathway for broadening minority participation in high-status fields; therefore investments in expanding

HBCUs' institutional capacity in such fields should be seen as worthy attempts to further, if not accomplish, these broader goals.

Fifth, the HBCU advantage, which I uncovered in the previous analysis, persisted in the face of statistical controls for institutional selectivity. That is, all other things being equal, African American college graduates who attended HBCUs assumed higher status jobs than their counterparts at comparable (in terms of institutional quality) non-HBCUs. Not only does this provide substantial support for what I have termed the HBCU advantage relative to occupational status but it also points to an area of concern—namely, the experiences of African American students at non-HBCUs or, in other words, PWIs. Indeed, countless studies have explored the experiences of Black students at White institutions (e.g., Allen, 1992; Fleming, 1984), but more information is needed to understand why Blacks at PWIs would assume lower status jobs compared to their same-race peers at HBCUs. It could be argued that PWIs lack the supportive environment that is typically ascribed to HBCUs, which, according to research, nurtures African American students' aspirations and engenders their success (Palmer & Gasman, 2008). To the extent that this is true, the question becomes, What can be done to build and sustain that sort of environment at PWIs, where the vast majority of Black collegians are educated today (Hoffman, Llagas, & Snyder, 2003)? Future research might explore this topic more closely and consider the role that mentoring (Strayhorn & Terrell, 2007), living–learning communities (Inkelas et al., 2006), and the availability of a critical mass (Pound, 1987; Tatum, 1997) of same-race peers play in Black students' success at PWIs.

Finally, African American college graduates who attended HBCUs did not differ from their same-race peers who attended non-HBCUs in terms of job satisfaction. This is consistent with previous research (Strayhorn, 2008). The weight of evidence suggests that factors included in the statistical model have a small, virtually negligible influence on job satisfaction (i.e., $R^2 = .06$). In fact, results across both studies provide clear evidence that job satisfaction is largely a function of variables not included in the analysis. This makes sense, as organization theory and previous empirical research suggest that institutional fit, professional roles and responsibilities, organizational commitment, and wages affect job satisfaction (Currivan, 1999; Martin & Bennett, 1996; Olsen, Maple, & Stage, 1995; Tett & Meyer, 1993). Researchers might consider this information when designing future studies. Future work would benefit from the inclusion of organization- and work-related variables, such as job responsibilities, size of staff, degree of autonomy, wages and benefits, years of work experience, and the extent to which individuals feel prepared or "able" to perform their jobs (i.e., work self-efficacy).

## Conclusion

In this study, I expand on prior labor market outcomes research, some of which is my own, by modeling the impact of attending a HBCU on post-BA earnings, occupational status, and job satisfaction for African American college graduates, controlling for differences in demographic traits, academic experiences, and institutional characteristics such as institutional selectivity. Findings raise important and necessary questions about issues of equity and diversity in higher education. A number of questions remain unanswered. Contrary to popular belief, institutional selectivity plays a relatively small role in explaining disparities between African Americans who attended HBCUs and their same-race peers at PWIs. This underscores the need for additional information to unravel the mechanisms that drive the HBCU advantage and disadvantage described in this report. While far from complete, this study represents an important and timely contribution to the labor market puzzle.

## Study 2: Long-Term Social Psychological Returns on Investment

The purpose of this study was to explore differences in various ROI in postsecondary education comparing Black graduates from HBCUs to same-race counterparts from PWIs using nationally representative data from the National Survey of Black Americans (NSBA) provided by the Interuniversity Consortium for Political and Social Research (ICPSR) at the University of Michigan. A single research question guided this set of analyses: Are there statistically significant differences between Black HBCU graduates and Black PWI graduates in terms of their occupational status, job satisfaction, self-esteem, Black identity, psychological distress, and life satisfaction, as measured by the NSBA?

## Methods

### *Design*

This study is based on a secondary analysis of data from the NSBA (Waves 1 – 4) sponsored by the ICPSR at the University of Michigan. The NSBA was designed expressly for the scientific study of Black Americans with input from social scientists, students, and a national advisory board. The NSBA examines neighborhood – community integration, social services, religion, education, effects of race on social outcomes, and an array of social psychological factors such as self-esteem, race identity, group stereotypes, and life satisfaction, which makes it superior to more recent national surveys (e.g., B&B) that include fewer Black Americans, no HBCUs, and/or no psychological measures. The NSBA employs a national multistage probability sample that generalizes to Black citizens in the United States aged 18 years or older. According to the survey's *Codebook*, Wave 1 was administered to 2,107 respondents, Wave 2 to 951 respondents, Wave 3 to 793 respondents, and Wave 4 to 659 respondents. For more information about the database, see Jackson et al. (1996).

### *Sample*

The analytic sample included 288 Black respondents to all waves of the NSBA who graduated from a 4-year college or university, representing approximately 14% of the original base sample. The majority of respondents in the analytic sample were Black women (65%), and the average age was 47.6 years ($SD = 12.3$), ranging from 29 to 84 years. More than half (51%) of sample participants were located in the southern region of the country, whereas 19% were in the Northeast, 24% in Midwest, and 6% in the West. Fifty-four percent of participants who completed college attended an HBCU or predominantly Black institution, whereas 46% attended a PWI. Statistics suggest that the sample is fairly representative of the adult Black population (Jackson et al., 1996).

### *Variables*

The dependent variables in this study are ROI measures or proxies of labor market success — namely, occupational status attainment and job satisfaction — and four long-term social psychological assessments, including self-esteem, Black identity, psychological distress, and life satisfaction.

Occupational status attainment was measured by converting each individual's occupational code to a measure of status attainment as defined by Duncan (1961) and later revised by Featherman and Stevens (1982). That is, each occupational code was assigned a SEI based on extensive research on occupational status (see Featherman & Stevens, 1982, for a full discussion of the SEI); higher scores are associated with higher status occupations, such as scientific and highly technical jobs (e.g., engineer, medical doctor, surgeon) and other professions (e.g., professor). This variable is consistent with techniques used in previous studies (Ehrenberg & Rothstein, 1994; Lin & Vogt, 1996; Smart, 1986; Strayhorn, 2008; Trusheim & Crouse, 1981).

Job satisfaction was defined as the degree of pleasure or happiness derived by employees from their work, work relations, and work-related factors, such as salary, benefits, work environment, advancement, and job security, in consonance with prior research (Fisher, 2000; Mau & Kopischke, 2001; Strayhorn, 2008). In theory, job satisfaction is based on the degree of congruence between an individual's skill and aspirations and the perceived or actual nature of the job (Bretz & Judge, 1994). Job satisfaction was measured using multiple items from the NSBA; response options ranged from 1 (*very dissatisfied*) to 4 (*very satisfied*).

Self-esteem was measured using multiple NSBA survey items drawn from Rosenberg's (1965) self-esteem index. An example of an item from this index is "I feel that I'm a person of worth." Response options range from 1 (*low self-esteem*) to 4 (*high self-esteem*); higher index scores indicate higher levels of overall self-esteem. This index has been used in prior research on Black Americans (A. L. Riley, 2003).

Black identity was measured using multiple NSBA survey items that composed a Black identity index described in the *Codebook*. Scores ranged from 1 to 4, with higher scores indicating stronger feelings of Black identity (i.e., ratings and beliefs that align with more Afrocentric views or perspectives). For more information, see Jackson et al. (1996).

Psychological distress was measured by computing an overall index that was equal to the mean of 10 NSBA survey items. An example item from this index is "During the past month, how much of the time did you feel (a) under strain, stress, or pressure; (b) in low spirits; (c) moody." Item response options ranged from 1 (*none of the time*) to 4 (*all of the*

*time*) and overall index scores were averaged so that higher scores indicate high levels of psychological distress. This index has been used in prior research (Ware, 1979), and Cronbach's alpha for internal consistency exceeds .89 in each wave of the NSBA (Jackson et al., 1996).

Life satisfaction was defined as the degree of pleasure or happiness derived from one's activities over a lifetime, in consonance with prior research (A. L. Riley, 2003). A survey item asked participants, "In general, how satisfied are you with your life as a whole these days?" Response options ranged from 1 to 4, with higher scores indicating higher levels of personal well-being or life satisfaction. For more information, see Goodwin (2012).

### *Data Analysis*

Several analytical procedures were used to investigate the ROI questions posed in this study. First, descriptive statistics and frequencies were computed to characterize the sample and to distinguish those who graduated from HBCUs from PWI graduates and those who did not attend or complete college at all. Independent samples *t*-tests were used to determine differences between HBCU and PWI Black graduate groups on both labor market outcomes and long-term social psychological indices; ANCOVA was used to estimate group differences controlling for sex, where indicated.

Last, hierarchical linear regression techniques were used to measure the influence of such factors on selected outcomes, based on group difference results. Hierarchical regression analysis is.

> a method of regression analysis in which independent variables are entered into the regression equation in a sequence specified by the researcher in advance. The hierarchy (order of the variables) is determined by the researcher's theoretical understanding of the relations among the variables. (Vogt, 1999, p. 129)

This statistical design permitted the use of a rigorous set of statistical controls and isolated the net effect (see Study 1 for more) of HBCU attendance/graduation on the dependent variables (Owings, 1996; Thomas & Heck, 2001).

According to tolerance statistics, multicollinearity was not a problem for this investigation, as the correlations between the independent variables are moderate to trivial and largely statistically nonsignificant. Moreover, correlations among independent variables were not a cause for concern.

## Results

Descriptive statistics suggest that the NSBA sample of Black respondents who completed college were majority female (65%) and that the average age at the time of Wave 4 was 47.6 years ($SD = 12.3$), with more than half (51%) living in the southern region of the United States.

### *Historically Black College or University Versus Predominantly White Institution Comparisons*

Independent sample *t*-tests were conducted to determine differences between HBCU and PWI Black graduates with respect to occupational status, job satisfaction, and four measures of social psychological factors, including self-esteem, Black identity, psychological distress, and life satisfaction. HBCU and PWI Black graduates differed significantly in terms of Black identity, $t(221) = -2.82$, $p < .01$. That is, HBCU Black graduates reported higher Black identity scores ($M = 3.34$, $SD = 0.50$) than did their same-race counterparts who graduated from PWIs ($M = 3.15$, $SD = 0.49$). Interestingly, these differences persist even when controlling for sex using ANCOVA techniques, $F(1, 220) = 7.86$, $p < .01$, partial $\eta^2 = .03$, $R^2 = .035$, adjusted $R^2 = .026$. Table 4.6 presents summary statistics.

Independent samples *t*-tests revealed no other statistically significant differences between Black graduates in the sample on labor market or social psychological factors including psychological distress, $t(93) = 0.91$, $p = .37$; job satisfaction, $t(183) = 0.99$, $p = .32$; life satisfaction, $t(223) = 0.43$, $p = .67$; and self-esteem, $t(222) = 0.076$, $p = .94$. None of these tests were statistically significant using .05 as a significant threshold. And although HBCU Black graduates ($M = 56.05$, $SD = 20.15$) rank higher than PWI Black graduates ($M = 52.37$, $SD = 20.70$) with respect to occupational status or SEI, these differences only *approached* statistical significance, $p = .10$, for an exploratory study.

To further explore the statistically significant differences in Black identity between Black graduates from HBCUs and their same-race counterparts from PWIs, hierarchical linear regression techniques were used to estimate the influence of

the institution's racial composition (i.e., HBCU vs. PWI) on Black graduates' Black identity index scores, controlling for sex. Results of the final regression model were significant, $F(2, 316) = 3.79$, $p < .05$. The sample multiple correlation coefficient was .15, indicating that approximately 2% of the variance in Black identity (adjusted $R^2 = .017$) could be accounted for by the linear combination of factors in the final model. On the basis of the regression results, graduating from an HBCU ($B = .144$; $\beta = .153$) tends to give Blacks an advantage over same-race PWI graduates in terms of their Black identity score. Table 4.7 presents the final model results.

## Discussion

This study employed nationally representative survey data from the NSBA to estimate long-term labor market and social psychological differences for Black graduates from HBCUs and PWIs. Findings suggest a number of important conclusions. Overall, Black graduates from HBCUs score higher than their same-race peers from PWIs on the NSBA's Black identity index. And although differences failed to meet the threshold for statistical significance, results regarding occupational status (or SEI) *approach statistical significance*, indicating that Black graduates from HBCUs generally assume higher status occupations when compared to Black graduates from PWIs.

Findings generally support conclusions from Study 1 and those reported elsewhere (Strayhorn, 2008), although results about graduates' Black identity represent a unique contribution of this study. More will be presented in a later section of the commissioned report.

## Study 3: Voices From the Field—What Historically Black College or University Graduates Say About Their Returns on Investment

Most research studies exploring the ROI in postsecondary education have employed quantitative methods like those presented in the first two analyses that are part of this commissioned report on HBCUs. While useful and generalizable to large numbers of African Americans and HBCU graduates (Thomas & Heck, 2001), quantitative studies are limited in their ability to uncover or unearth the experiences and perceptions of HBCU alumni who might offer details about *how* their college education at an HBCU has served them in life and *what* they have gained as a result of that investment. Qualitative methods are superior to quantitative techniques for achieving such naturalistic aims (Erlandson, Harris, Skipper, & Allen, 1993; Guba & Lincoln, 1981); thus this third analysis is based on a qualitative approach, as described in the next section.

## Methods

### *Research Design*

Consistent with the sequential mixed methods explanatory design (Creswell, 2003) that guided the organization and sequences of studies presented in this commissioned report (i.e., Quant-Quant-*qual*), this third study employed a constructivist qualitative approach involving one-on-one interviews with HBCU alumni and an open-ended demographic questionnaire. This approach was selected for several reasons, one of which is its epistemic underpinnings about the very nature of knowledge (i.e., that it is constructed) and how participants in a social setting construct multiple realities (Glesne, 2006). Furthermore, this approach has congruent positioning with my own ethics and values as a researcher; it allows me to "give voice" to a group of individuals (i.e., HBCU alumni) who are infrequently studied in the research literature and to do so without "doing violence" to their authentic voices (Lincoln & Guba, 1986).

### *Participants*

Participants were selected purposefully using a snowball or chain sampling approach (Merriam, 1998) that has been used in my prior qualitative research on Black college students (e.g., Strayhorn, 2013; Strayhorn & Tillman-Kelly, 2013). As Patton (1990) aptly described, "the logic and power of purposeful sampling. .. leads to selecting information-rich cases for study in depth. Information cases are those from which one can learn a great deal about issues of central importance to the purpose of the research" (p. 46). Specifically, I worked with the presidents and provosts of several major HBCUs to identify and recruit a pool of prospective participants, that is, Black individuals who earned a bachelor's degree from an

HBCU, identified as African American or Black, and were willing to talk with me about their experiences in school and since graduation. All prospective participants agreed to participate, and this resulted in eight exploratory interviews.

Participants all identified as African American or Black, with only two expressing primary ethnic identification, as Haitian and Nigerian, respectively. Participants ranged from recent graduates who attended their HBCU from 2003 to 2007 to older graduates who attended their HBCU from 1978 to 1983. Academic majors included finance, political science, business education, business management, and psychology, to name a few; minors included business, finance, and prelaw. All but one entry-level participant rated their current jobs as mid-level or senior-level (10 or more years), and annual salaries ranged from $40,000 to more than $70,000 per year. Participants reported having two to six jobs since HBCU graduation, with the most recent graduate having the fewest jobs since graduation, as might be expected.

### *Data Collection*

Data were collected via semistructured, in-depth, one-on-one interviews over a 1-month period. The purpose of interviewing is to "find out what is in and on someone else's mind" (Patton, 1990, p. 278). In this case, I wanted to know about their postgraduation experiences and what they perceived as the return on their investment in graduating from the HBCU they attended. Interviews were conducted in a way to elicit stories from each participant about their HBCU experience, any challenges and advantages, as well as what each perceived as gains or returns on investment, and these procedures followed those recommended by methodologists (Vygotsky, 1987). Interviews, on average, lasted approximately 30 minutes, although they ranged from 25 to 50 minutes across the sample. Consistent with the study's design (Kvale, 1996), interview length varied across participants because some needed more, or less, time than others to recall their college experiences (e.g., it was a recent memory for recent graduates), to convey their feelings about their HBCU experience through spoken words, and to understand the "motive[s]" for my inquiry, which will be discussed in a later section of this report. In some cases, additional questions were resolved through follow-up correspondence with the interviewee via telephone, e-mail, or, for one participant, in person.

A semistructured interview protocol was employed that included questions about each participant's demographic background (e.g., race, sex), prior schooling experiences (e.g., HBCU attended, dates of attendance, academic major or minor), and perceptions of ROI (e.g., "what's your overall opinion of your experience?"). Given the exploratory nature of this research, I pilot-tested an interview question set that was quite productive for this study: "If someone asked you "whether attending [your HBCU] has paid or is paying off for you, what would be your response and why?" Questions were designed to elicit recollections of notable experiences, people, or circumstances related to their HBCU experiences and postgraduation ROI. Where necessary, follow-up probes were used to prompt reconstructions of HBCU graduates' experiences (e.g., "Can you tell me about a time when...? ").

Because I wished for interviews to be candid, I promised participants confidentiality, which proved important to most of the respondents, who were concerned about comments being used to diminish the important role that HBCUs play in the higher education enterprise. For example, three interviewees asked to see copies of my field notes and any recorded material from their interviews as a way of inspecting the information that was shared in any subsequent report. Virtually all participants asked questions about my motives for the study, whether I had attended an HBCU, and who would see the results and for what purpose. Answering their questions, building rapport (where possible), and promising to protect the names of HBCU institutions seemed to quell any concerns (Glesne, 1989).

### *Data Analysis*

Interview data were analyzed in three stages using the constant comparison method, as described by Strauss and his colleagues (Strauss, 1995; Strauss & Corbin, 1998). First, field notes and comments were read and reread to generate initial categories of information or codes that represented "an initial plot of the terrain" (Miles & Huberman, 1994, p. 69) using key findings from Study 1 and Study 2 as a guide; this is known as *open coding* (Strauss & Corbin, 1998). Coding is the process of "organizing the material into 'chunks' before bringing meaning to those chunks" (Rossman & Rallis, 1998, p. 171), although in this study, meaning was derived, in part, from results presented earlier in the report (e.g., looking for comments about occupational status).

Next, codes were collapsed by grouping categories that seemed to relate to each other while leaving intact those that stood independent from all others. This smaller list of categories was used to generate *supercodes*, or preliminary themes.

Last, themes were compared and contrasted to understand the degree to which they were similar; closely related themes were collapsed or renamed so that the "whole name" reflected the sum of its parts. A final list of themes were derived and represent the major finding of the qualitative study, in keeping with findings presented earlier.

## Findings

Three major themes were identified using the analytic approach described in the previous section: (a) HBCU graduates are socialized to assume leadership and high-status occupations; (b) HBCU graduates' Black identity was affirmed and strengthened in college; and (c) HBCU graduates feel as if they have received "significant returns" on their investment, although returns are not necessarily economic, financial, or monetary. Each of these themes is unpacked and explained briefly in the following pages, using verbatim quotations or paraphrased statements from interview participants to illustrate the meaning and significance of each finding.

### *Assuming Higher Status Occupations*

Most HBCU graduates with whom I spoke talked at length about the role that HBCUs play in educating African Americans for positions of leadership, influence, and high status. Some shared stories about their HBCU institutions' histories that involved educating strong Black leaders and intellectuals, such as Dr. Martin Luther King, Toni Morrison, and the Reverend Jesse Jackson, and hiring well-known professors, such as W. E. B. DuBois. In fact, many of them shared how strong supportive relationships with HBCU faculty empowered them to excel academically and encouraged them to assume positions of leadership and high-status occupations. Consider the following:

> I am now on the path to managing all aspects financial for a multi-million dollar company . . . . My finance professor [name removed] at [said HBCU] was definitely a big factor in my success. He always pushed, encouraged, and most importantly practiced what he preached. Aside from his professional teaching career, he owned two franchised restaurants, a dealership and invested wisely. He shared those lessons with us, as his students, and always pushed us to do well too. He would say don't plan to work *for* people [emphasis added] … work for yourself.

Indeed, several of the participants whom I interviewed were at the "top of their field" or headed in that direction. And consistent with findings from Study 1, participants indicated satisfaction with returns or rewards beyond annual salary to include benefits, perks, and opportunities for advancement. Consider the following:

> Within 5 years I will be the controller of my company making a six-figure salary, plus bonus, and company perks which sometimes matter the most. I usually don't talk about my salary but I am very proud of where my HBCU education has taken me and equating it into dollars from a business standpoint . . . . Attending [said HBCU] has definitely given me an enormous return on investment and helped me achieve a senior-level job in a selective career.

Several interview participants shared that they were just one of several HBCU graduates in their families, reflecting a long-standing conclusion from the literature that HBCUs have educated large numbers of African Americans at *all levels* of postsecondary education and, still today, produce the vast majority of Black doctors, lawyers, teachers, and those who enter high-status occupations (Strayhorn, 2008). Consider the following comments from a participant:

> My grandmother reminded me about her [HBCU alma mater] and encouraged me to apply. I am a third-generation graduate of [said HBCU], my grandparents met at [said HBCU], and I have an aunt and uncle who completed their studies [there] as well. Each have received additional advanced degrees, certificates, and work in "good jobs" for major corporations. I would say that graduating from [said HBCU] has paid off for me and my family.

Comments like those shared in this section reveal the important role that HBCUs play as part of the higher education enterprise, educating large numbers of African Americans, preparing them for leadership in the Black community and larger society, and making them ready to assume high-status occupations.

### *Affirming Black Identity*

A second major theme that relates to results from the secondary analyses of existing survey data presented earlier in Study 1 and Study 2 is that Black identity and culture tend to be affirmed, celebrated, recognized, even valued, at HBCUs. Consequently, HBCU graduates report stronger Black identity ratings on surveys like those presented in Study 2 and speak more candidly about Black culture, race and ethnicity, and the contributions of Black Americans to society and beyond.

Participants shared many direct comments that reflected results from the NSBA analysis presented in Study 2: HBCU graduates report higher Black identity scores after graduation or later in life compared to same-race graduates from PWIs.

Prince (a pseudonym) shared the following:

> I knew that I wanted to stay within state because I wanted to be close to my family. My parents were the ones who urged me to attend an HBCU because I grew up around mostly Caucasian people. The purpose was for me to learn about my culture and to be proud of being an African American. I was ashamed of being Black because the environment in which I was brought up said that African Americans were less than. We faced numerous events of racism in our neighborhood because we were the only Black family and I started to resent that . . . . That's why they wanted me to go to [said HBCU].

Several expressed that faculty and staff at HBCUs played a major role in affirming their sense of self (e.g., confidence) and racial identity. Here are a few excerpts:

> Although I'm a Black immigrant from Nigeria, my academic advisor took me under his wings and helped me realize my potential and strengths … thanks to his pushing and preaching that gave me confidence and set me up to compete with anyone.

> [HBCU] faculty and staff invest in their students and they pushed me to be more than "just a football player," even though I didn't see myself as more than a football player and quite frankly didn't want to be anything *more than* a football player when I first enrolled. They taught me that I was more, had more, and had to do more as a Black male.

Others shared how various aspects of their experiences at the HBCUs they attended affirmed their racial/ethnic (Black) identity and taught them about Black culture. Consider the following remarks:

> During my matriculation at [said HBCU], I was taught about the history of the school and embracing our culture and teaching everyone about Black people and [the HBCU]. I joined several social organizations and a lot of them were Black focused like the UNCF [United Negro College Fund], NAACP [National Association for the Advancement of Colored People], and I excelled academically but I also became more aware of who I was as a Black person and what my people had done to build this country … and that motivated me.

Although institutional histories, faculty support, family legacies, and campus involvement experiences affirmed Black HBCU graduates' racial identity, there were also aspects of the campus ecology that strengthened their senses of self. For instance, participants talked about statues of historical Black figures on campus, of names of famous African Americans on buildings, and of how the presence of a critical mass of Blacks on campus shaped or changed their racial beliefs.

### *Nonmonetary Returns on Investment*

Participants spoke at length about their respect for the HBCUs they attended, how the HBCUs prepared them (and others) for leadership and high-status occupations and affirmed their ethnic/racial identity, but more than half stressed that the "returns on investment" are not always monetary, financial, economic, or "easily counted," as one put it. Consider the following:

> I think my education from [said HBCU] is paying off tremendously but not just in dollars . . . . It's in "sense" too. I learned how to do a lot. How to persevere. How to work hard and wait for gratification. How to stand out even when your school is less well known. I was one of seven new hires in my company and the only African American. I

> also attended a school that a majority had never heard of and other new hires attended very prestigious PWIs. Still I worked hard, used all my skills, had grit, and surpassed all the others in the end and I owe it to [said HBCU] for that.

Some attributed their personal and professional career success to opportunities that they had during college at the HBCUs they attended, and these also represented other nonmonetary ROI. Consider the following:

> The Cooperative Education program at [said HBCU] was amazing and our [director] prepped us for the big interviews. Being required to complete two co-ops and co-op classes before graduation prepared me for working for large corporations and perfected my interviewing skills. I mean in the end this might lead me to more money, but right now I see it as a "return on investment" because I'm better prepared than those who went to PWIs or other schools.

A host of other nonmonetary returns were mentioned over the course of interviews; nonmonetary but significant returns included grit, perseverance, satisfaction with one's professional field, confidence, ability to learn, discipline, and "friends for life."

## Discussion

Recall that the purpose of this study was to elicit qualitative data through one-on-one interviews as a way of explaining or further investigating results from the quantitative analyses presented earlier in this commissioned report (Studies 1 and 2). Analyzing interview data from eight HBCU graduates, I identified three themes that align with results from the two quantitative studies presented earlier: (a) HBCU graduates are socialized to assume leadership and high-status occupations; (b) HBCU graduates' Black identity was affirmed and strengthened in college; and (c) HBCU graduates feel as if they have received "significant returns" on their investment, although returns are not necessarily economic, financial, or monetary. Qualitative results not only reflect results from the survey analyses but offer deeper insight into how, why, and to what extent these findings are true for Black HBCU graduates.

Findings from the present study also provide insight into the ways in which campus and other professionals and policy makers can work to promote success and greater returns for Black HBCU graduates specifically and for minority-serving institution (MSI) graduates generally. These conclusions and implications are highlighted in the final section of this report.

## Recommendations for Historically Black College or University Research and Policy

"Investments in education pay off for individuals [and societies] in many ways" (Hout, 2012, p. 379). Black graduates from HBCUs assume higher status occupations, develop stronger Black identities, and report nonmonetary returns on their investment. Still, there's fairly consistent evidence that they earn lower annual salaries when compared to similarly-situated Black graduates from PWIs, and there are no significant differences between Black graduates from HBCUs and those from PWIs in terms of job satisfaction, life satisfaction, self-esteem, and psychological distress. Although the three studies presented in this commissioned report shed light on a number of important topics and issues related to ROI, a number of questions are left unanswered, and there are important directions for future research and policy.

National trends indicate that there are approximately 103 HBCUs among the more than 4,300 colleges and universities in the United States, representing less than 3% of all postsecondary institutions. This small segment of the higher education enterprise enrolls upward of 20% of all Black college students and produces 25% of all Black graduate degrees in science, technology, engineering, and mathematics (STEM) fields. Whether the returns measured in this report hold for Black HBCU graduates in STEM fields is an open question. Data are needed that can be mined for this purpose — unfortunately, the vast majority of existing data sets have relatively few Black students in large samples, adequate numbers of Black students overall but relatively few earning degrees in STEM, or adequate numbers of Black students in STEM fields but relatively few HBCUs included in the institutional sample. Future survey efforts should be designed with these goals in mind, using appropriate oversampling techniques, weighting effects, and stratified random sampling designs, where necessary.

Data sets that permit ROI analysis are hard to come by, and even those that are readily available are limited in a number of ways. Databases like B&B or the Educational Longitudinal Study sponsored by the Institute for Education Sciences within the U.S. Department of Education require restricted licenses to conduct the kind of analysis that most ROI researchers have in mind. Restricted license processes require time, resources, and protections (e.g., firewalls) and

can involve long wait times for data to be released. Other databases (e.g., NSBA) that might be more readily accessed through online warehouses like ICPSR tend to be dated, incomplete (i.e., might not include all variables, thus increasing model misspecification), or restricted to scales and indices created by the sponsoring organization and do not permit scale creation, recoding, or indexing by the secondary analyst. Future efforts should address these issues by providing open access to high-quality data about HBCUs and their graduates and flexibility for researchers to create or compute indices and scales—and I include robust measures of the factors and variables of interest to ROI analyses.

Much can be done to extend what we know about ROI for all students, MSI students, and HBCU students specifically. The following three points are offered as recommendations for the future agenda on this topic:

1. More research is needed to explore the nonmonetary ROI for Black graduates from HBCUs. Future studies and surveys should include measures like those examined in Study 2, including self-esteem, psychological distress, and life satisfaction. Other outcomes or returns could be considered, such as well-being, professional identity, engagement in prosocial activities, and even health morbidity outcomes. Integrated panel studies are recommended that draw together data from multiple large surveys, especially those that combine institutional variables with individual factors, financial information, academic transcripts, and postgraduation evaluations.
2. Findings from this study converge with those presented elsewhere (Strayhorn, 2008) and strengthen the conclusion that Black graduates from HBCUs assume higher status occupations but generally earn lower salaries. It is still less clear just why this is the case, although I have argued that employers' biased preferences likely play a role. Future research and data should be marshaled to explore employer preferences; how they play out in hiring decisions and salary judgments; and ways to reduce, if not eliminate, such disparities. Several designs and techniques can be used, although I am often reminded of the old "résumé experiments" where employers received résumés that were virtually identical, except for the name or "expressed [racial] identity" of the person; employers consistently rated applicants perceived to be Black lower than those perceived to be White and offered them lower pay on average. Using similar designs or real data from Black graduates of HBCUs might be a fruitful step forward for ROI research.
3. Contrary to popular belief, institutional selectivity plays a relatively small role in explaining ROI disparities between Black graduates who attended HBCUs and their same-race peers at PWIs. This underscores the need for additional information to unravel the mechanisms that drive the HBCU "advantages" and "disadvantages" described in this commissioned report. Institutional factors might include perceived prestige, endowment, spending on support services, faculty productivity, and ranking according to *U.S. News and World Report*, to name a few possible factors. Future research efforts should incorporate such measures and others deemed important for explaining variance in the outcomes that we desire for students.

## Conclusion

The studies presented in this commissioned report expand on prior labor market outcomes research, some of which is my own (Strayhorn, 2008), by modeling the impact of attending a HBCU on post-BA earnings, occupational status, and job satisfaction for African American college graduates, controlling for differences in demographic traits, academic experiences, and institutional characteristics such as institutional selectivity (Study 1). Results also demonstrate that Black graduates from HBCUs report stronger racial identity than their same-race peers who graduated from PWIs; this breaks new ground on ROI research by exploring long-term social psychological outcomes. And insights offered in one-on-one interviews (Study 3) generally converge with those from the quantitative studies about the influence of HBCUs on Black graduates.

Taken together, the findings raise important and necessary questions about issues of equity and diversity in higher education. Although they are far from complete, results presented herein represent important and timely contributions to the ROI puzzle for HBCUs. Many more pieces are needed to solve this puzzle in the future.

## Suggested citation:

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## 5. The Return on Investment for an AANAPISI-Funded Program: Outcomes for Asian American and Pacific Islander Community College Students

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Over half of all students who enroll in community college are in of need remediation and of those students who register for at least one remedial course, the likelihood of transferring to a 4-year institution or earning a college degree decreases. Accordingly, this study examines the impact of a federally funded developmental learning community (LC) on the educational outcomes of low-income Asian American and Pacific Islander (AAPI) students enrolled in remedial education at a 2-year Asian American and Native American Pacific Islander serving institution (AANAPISI). Utilizing institutional data and an in-depth assessment of the LC, a *value-added* framework guided our use of propensity score matching techniques, which finds that AAPI students in the LC are more likely to transition from developmental to college-level English than their peers who did not participate in the LC, achieved this transition in less time, and are more likely to pass their subsequent college-level English course. Students in the LC are also more likely to earn associate's degrees than their non-LC peers. The findings of this foundational study on low-income AAPIs have important implications for better serving low-income students in community colleges, particularly those enrolled in minority serving institutions (MSIs).

**Keywords** Learning communities; community colleges; Asian American and Pacific Islander; students; minority serving intuitions; AANAPISIs; developmental education

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Despite common misconceptions about Asian American and Pacific Islander (AAPI) students experiencing unparalleled academic success and primarily enrolling in highly selective colleges, nearly half of all AAPI college students are enrolled in community colleges, and one in five requires remedial education (National Commission on AAPI Research in Education [CARE], 2010, 2013). When examining the differences across AAPI ethnic subgroups, the myth of their universal success is further diminished. Take, for example, the national bachelor's degree attainment rates of Southeast Asians—a regional group that has historically faced greater barriers to academic success—including Vietnamese (25.8%), Cambodian (14.1%), Hmong (14.7%), and Laotian (12.4%; CARE, 2013). Held up against the degree attainment of Taiwanese (74.1%), Asian Indians (71.1%), and Chinese (51.5%; CARE, 2013) achieving the same level of education, the huge disparities within the AAPI population and the inaccurate portrayal of AAPIs as model minorities become more apparent.

The vast differences in the population are even more dramatic when considering the differences between AAPIs attending 2-year colleges with those in university settings. AAPI students at community colleges, for example, are more likely to face a number of academic risk factors that serve as barriers to persistence and college completion, including delayed matriculation, enrolling part time, having family responsibilities, low socioeconomic status (SES), and working while enrolled in college (CARE, 2011; Yeh, 2002). With this in mind, targeted interventions focusing specifically on particular subgroups and their specific academic needs and challenges have been found to improve the educational experiences and outcomes of AAPI students. In a study at Coastline Community College, for example, Nguyen, Nguyen, and Nguyen (2014) highlighted institutional efforts that respond to the unique needs of a high concentration of first-generation Vietnamese students and the extent to which the targeted efforts have helped Coastline meet the institution's goals to increase transfer to and enrollment in degree-applicable courses from developmental education. While scholarship focusing on specific AAPI subgroups is limited, examples like this one are foundational for highlighting the need for higher education to focus on the unique academic needs of AAPI students.

The opportunity for institutions that serve high concentrations of low-income AAPI students to pursue targeted interventions to address the unique needs and challenges of their students has become increasingly possible given the creation of the Asian American and Native American Pacific Islander serving institution (AANAPISI) program. The federal AANAPISI designation and funding emerged in 2008 and is one of the most recent additions to minority-serving institutions (MSIs). To receive the AANAPISI designation and grant funding, institutions must enroll at least 10% full-time AAPI students, of which 50% must be low income (as determined by Pell Grant eligibility).

AANAPISIs reflect the growing AAPI population, especially in concentrated areas throughout the United States. At its inception, 116 institutions were eligible for AANAPISI designation, 12 were designated institutions, and 6 were funded AANAPISIs (Teranishi, Martin, Bordoloi Pazich, Alcantar, & Nguyen, 2014). By 2012, the number of AANAPISIs increased significantly to 153 eligible, 78 designated, and 21 funded AANAPISIs (Teranishi et al., 2014). More than half of all AANAPISIs are located in the Western and Pacific regions of the United States (CARE, 2013).

AANAPISIs have been critical for recognizing the needs of and serving large proportions of underserved and underrepresented low-income AAPI college students (Teranishi et al., 2014). Because of the high concentration of AAPI students in community colleges, nearly half of all AANAPISIs are community colleges (52.4%), making them critical sites for improving national college completion rates for this population (CARE, 2013). This is clearly illustrated when we examine national degree-earning trends by AANAPISIs; in 2010, nearly half of all associate degrees granted to AAPIs nationally were from AANAPISIs (CARE, 2013).

To address the needs of AAPI students in community college, many AANAPISIs invest their MSI funding in academic and student support services to improve the transition from remedial education to college-level courses and the retention, transfer, and degree-earning rates of these students. Some AANAPISIs develop student support centers equipped with computer labs; others provide tutoring, offer a designated academic counselor for AAPI students, or provide professional development for faculty and staff. Most community colleges use their AANAPISI funds to provide developmental education support services, often through LCs. However, like other MSIs, very little is known empirically about the impact of these federally funded academic and student support services at AANAPISIs. Moreover, few studies have examined the educational outcomes of AAPI students at community colleges specifically (J. Park & Teranishi, 2008). Accordingly, in this study, we examine the impact of an MSI-funded developmental education LC on the educational outcomes of AAPI students at one community college. The following research questions guide our study:

1. Did the AANAPISI-funded LC lead to improved short-term outcomes (i.e., transition from developmental to college-level English courses, time to transition to college-level English, course passing rates) for AAPI students in developmental education compared to AAPI students who did not participate in an LC?
2. Did the AANAPISI-funded LC lead to improved long-term outcomes (i.e., persistence, transfer and degree attainment, time to transfer and degree attainment) for AAPI students in developmental education compared to AAPI students who did not participate in an LC?
3. Were there any differences in outcomes for targeted AAPI ethnic groups (i.e., Southeast Asian and Pacific Islanders) in the AANAPISI-funded developmental English LC compared to those not in an LC?

## Developmental Education and Learning Communities

Nationally, more than half of all students in community colleges have taken at least one remedial course — variously called developmental education or basic skills course work (Bailey, Jenkins, & Leinbach, 2005; Bailey, Jeong, & Cho, 2010). To make matters worse, a large proportion (52%) of students in need of developmental education entering college are racial/ethnic minority students (Fernandez, Barone, & Klepfer, 2014), thus further widening the opportunity gap between racial/ethnic minorities and Whites.

Developmental education refers to courses aimed at developing the literacy, writing, and/or mathematics skills of adult learners whose assessment scores, at the start of college, placed them below college-level mathematics and English courses. Unfortunately, less than 50% of students placed into developmental education will finish their required developmental education course work, and only 25% will earn a certificate or degree within 8 years (Bailey, 2009). For most students, degree completion in 5 years is difficult due in large part to the remedial course work needed prior to enrolling in college-level courses (D. Shapiro et al., 2012). In noting students' progression through developmental sequences, researchers

**Table 5.1** Summary Statistics for Participant and Comparison Groups

| Variable | Obs. | Mean | *SD* | Min. | Max. |
|---|---|---|---|---|---|
| Participants | | | | | |
| Age | 131 | 22.56 | 2.1774 | 18 | 30 |
| Male | 130 | 0.54 | 0.5004 | 0 | 1 |
| Pell recipient | 122 | 0.12 | 0.3297 | 0 | 1 |
| Matched comparison group (no LC) | | | | | |
| Age | 118 | 22.42 | 3.0504 | 19 | 41 |
| Male | 118 | 0.58 | 0.4963 | 0 | 1 |
| Pell recipient | 118 | 0.13 | 0.3345 | 0 | 1 |
| Full comparison group | | | | | |
| Age | 868 | 23.13 | 3.8638 | 18 | 54 |
| Male | 864 | 0.58 | 0.4942 | 0 | 1 |
| Pell recipient | 812 | 0.05 | 0.2113 | 0 | 1 |

*Note*. LC = learning community.

**Table 5.2** Ethnicity Match for Participants and Matched Comparison Group

| | Participants | Matched group | Total |
|---|---|---|---|
| Cambodian | 6 | 4 | 10 |
| Chinese | 35 | 37 | 72 |
| Filipino | 31 | 17 | 48 |
| Guamanian | 1 | 0 | 1 |
| Indian | 8 | 11 | 19 |
| Korean | 3 | 2 | 5 |
| Other Asian | 8 | 11 | 19 |
| Other Pacific Islander | 6 | 4 | 10 |
| Vietnamese | 33 | 32 | 65 |
| *Total* | *131* | *118* | *249* |

regard placement errors, instructional practice, and the power of external pulls (e.g., working more than part time, attending school part time) as obstacles (Belfield & Crosta, 2012; Grubb, 2013; Hodara, Jaggars, & Karp, 2012).

To address this, developmental education LCs emerged in community colleges across the nation over the last four decades (Matthews, 1986; B. L. Smith, MacGregor, Matthews, & Gabelnick, 2004), especially at institutions more likely to serve greater proportions of underrepresented racial/ethnic minority students, such as MSIs. Given that a majority of students enrolled in community colleges are not academically prepared for college-level course work (Parsad, Lewis, & Greene, 2003), LCs serve as a means to improve the academic success of students. LC models include (a) single classroom-based models (Bielaczyc & Collins, 1999), (b) cohort-based models (Kuh, 2008), (c) virtual LCs (Chen, Chen, & Kinshuk, 2009), and (d) living–learning communities (Brower & Inkelas, 2010). The structure of LCs varies, but their unifying characteristic can be seen within the cohort model where two or more individually taught classes are linked together (through assignments, topics, etc.). More comprehensive LC programs may further integrate curriculum, promote cooperation among instructors, and even foster collaboration with student services such as counseling programs (Gabelnick, MacGregor, Matthews, & Smith, 1990).

In addition to structural differences, the curriculum within LC classrooms also varies. For example, institutions may pair a remedial course with a personal development course focused on developing students' college success skills (e.g., time management, communicating with faculty or career search and preparation), a supplemental instruction course (supplements the remedial course with tutoring or study skills), or a college-level course. Many LCs will also incorporate an embedded counselor (Levin & Calcagno, 2008). In 2002, the National Survey of First-Year Academic Practices found that 62% of colleges practice some form of the outlined LCs (Barefoot, 2002).

Based on the idea that more academic and social involvement translates into a greater likelihood of academic success, LCs are associated with higher retention rates (Lindblad, 2000; N. S. Shapiro & Levine, 1999), higher grade point averages (Baker & Pomerantz, 2000), and increased cognitive skills, especially in reading and writing (Zhao & Kuh, 2004). LCs are seen as a helpful strategy to foster promising results among the large numbers of commuter and part-time students. For

example, Tinto's (1998) mixed method study at La Guardia Community College found that remedial students in an LC were more likely to pass their courses than nonparticipants. This finding is confirmed by Kingsborough's Opening Doors Learning Communities program, which grouped freshmen into three classes: remedial English, a college-level course, and a one-credit orientation course (Bloom & Sommo, 2005). Compared to nonparticipants, students who participated in the LCs at Kingsborough were more likely to pass the English skills assessment test and were more likely to complete the remedial English requirement (Bloom & Sommo, 2005). According to Hill and Woodward's (2013) study at an urban campus, students who are more invested in their learning environment are more likely to increase retention, obtain a greater number of credit hours taken, and progress toward degree completion.

However, studies have found mixed results regarding the impact of developmental education LCs on academic achievement beyond the intervention term and/or after the subsequent term (Scrivener et al., 2008). For example, researchers at MDRC found students in developmental LCs improved their academic achievement and passed developmental education LC courses at greater rates than comparable students, but the impact of the LC seemed to plateau two terms after the intervention (Scrivener et al., 2008). This reinforces the question regarding the costs and benefits or the added value of LCs as an approach to developmental education. Additionally, limited research has focused on the impact of LCs for specific racial/ethnic groups.

## Conceptual Framework

This study is guided by an analytic framework used to examine the added value of MSI-funded programs on college campuses (Rubin, Stuart, & Zanutto, 2004). The *value-added framework* is used to assess the cost–benefit analysis of policies and programs. Based on analysis of budget allocations, the LC (the treatment) we are examining was funded exclusively by the institution's AANAPISI grant. In other words, the grant made these targeted efforts possible, which afforded us an opportunity to examine, to the extent possible, the isolated value added of an AANAPISI-funded LC relative to students' educational outcomes at De Anza College (Rubin et al., 2004). To analyze the value added of the LC, we considered the unit (students), the treatment (developmental LCs), and the potential outcomes (short- and long-term educational outcomes; Rubin et al., 2004). The short-term outcomes examined included transition from developmental to college-level courses and credit accumulation. The long-term outcomes included persistence from one academic term to the next, degree attainment, and transfer rates.

We examined both short- and long-term outcomes as these are performance measures most relevant to community college leaders and higher education policy makers. Additionally, our research design and the large AAPI student enrollment at the campus site allowed us to compare AAPI students in AANAPISI-funded LCs (participants) to comparable AAPI students in developmental education who did not participate in the LC (Rubin et al., 2004). This allowed for isolation of the value added of the AANAPISI grant–funded LC in terms of short- and long-term education outcomes of low-income AAPI students in developmental education at De Anza College.

## Research Setting and Program Description

De Anza College is a large community college located in the suburban community of Cupertino, California. De Anza's campus looks no different than a university campus, with its tall trees, old Spanish-style buildings, large open spaces, and a student center (Mery & Schiorring, 2008). Nearly half of all students (over 47.9%) attending De Anza College commute from the neighboring working-class communities, with smaller concentrations of students from the affluent part of the city (8.4% from Cupertino). De Anza has a racially diverse student population, with the largest group being AAPI students at 39.3% (25.1% White, 19.7% Latina/o, 3.6% Black; Teranishi et al., 2014). Additionally De Anza College has one of the highest graduation and transfer rates in the state of California, but this is only the reality for particular populations. Filipino, Southeast Asian (e.g., Cambodian, Hmong, Laotian, Thai, Vietnamese), and Pacific Islander (including Hawaiian) students, in particular, are less likely to transfer and more likely to be placed in developmental education.

As for many other community colleges, the transition from developmental education to college-level courses is a significant challenge for De Anza College. In fall 2009, 86% of new students who took the English and mathematics placement exams did not qualify for college-level courses (De Anza College, 2012). To address the need to support AAPI students in general and Filipino, Southeast Asian, and Pacific Islander students specifically in their transition to college-level course work and to increase their persistence and transfer rates, De Anza College pursued the AANAPISI designation and grant.

In 2008, De Anza College was part of the first cohort of institutions to receive an AANAPISI designation and grant funding to improve the developmental education transition and transfer rates for AAPI students.

Already existent on De Anza's campus was its success in high-impact practices through developmental education LCs. Many of the developmental LCs focus on guiding students from developmental English or mathematics to college-level courses. Using the AANAPISI grant to address this need and leveraging the campus's strength in LCs, De Anza College developed an AAPI-specific culturally responsive LC focused on developmental English. This LC paired a developmental English reading and writing course that is two levels below college-level English with a college credit–bearing Asian American Literature course.

The most unique feature of the AANAPISI-funded developmental LC, and different than other LCs on campus, is its specific focus on incorporating culturally relevant pedagogies and curriculum focused on AAPIs, which has been found to be an effective teaching practice, especially in multicultural learning environments (Freire, 1970/1993; Ladson-Billings, 1995; Morrison, Robbins, & Rose, 2008). Culturally relevant pedagogies are teaching practices that focus on collective empowerment and the utilization of students' own cultures as a vehicle for learning. The four aspects of culturally relevant teaching are (a) caring for "the personal well-being and academic success of students" and acting accordingly, (b) effective communication with students and in teaching, (c) incorporating a culturally diverse curriculum, and (d) instruction that engages different forms of learning and participation (Gay, 2010; Morrison et al., 2008). Culturally responsive teaching has been found to develop a broader sociopolitical consciousness that allows students to critique cultural norms, values, and institutions that produce and maintain social inequities (G. A. Garcia & Okhidoi, 2015; Ladson-Billings, 1995). Aside from developing students' critical consciousness, some experts also report that culturally relevant teaching promotes students' motivation to learn (Ginsberg & Wlodkowski, 2009), their sense of belonging and academic self-confidence (Dibben, 2004; Hurtado & Ponjuan, 2005), a more positive view of self and group identity (Sealey-Ruiz, 2007), and their academic and social engagement in class, thus influencing their academic achievement (Gay, 2010; Ginsberg & Wlodkowski, 2009). In the AANAPISI LC, students read texts written by AAPI authors in the Asian American Literature course and developed their writing skills in the developmental English course. The instructors merged these two courses through classroom themes tied to the historical and current issues of their communities—a practice that has been found to be particularly effective because it situates learning within an individual's lived experience (Magolda & King, 2004).

Additionally, this LC, as opposed to other developmental courses not tied to an LC, included the following services: (a) comprehensive wrap-around support services (e.g., an embedded counselor providing services for students in and out of class); (b) AAPI culturally relevant, critical, and engaged pedagogies (e.g., critical reflection journals; AAPI community leaders as in-class speakers; small peer support groups called *pamilyas*, which translates into *families* in Tagalog); and (c) AAPI culturally relevant, critical, and civic curriculum (e.g., students learn about AAPI history, especially as it relates to their communities). These practices aimed to engage students in class, on campus, and in their communities, with the goal of preparing and supporting students to transition into college-level course work, increase persistence, and ultimately achieve transfer or earn a degree. AANAPISI grant funding enabled De Anza not only to provide these supplemental support services but also to target them toward AAPI students.

## Methods

This study was part of a 3-year research project to examine the impact of MSI grant-funded interventions on the educational success of racial/ethnic minority students. In this study, we examined the impact of an MSI-funded developmental LC intervention at one community college. We gauge institutional performance by studying the added value of the AANAPISI-funded programs relative to student success utilizing deidentified data received from the participating institution. Some of the findings reported in this report were highlighted in a previous report (see Teranishi et al., 2014); they are included in this report to offer a comprehensive story about the impact of this AANAPISI-funded intervention for low-income AAPI students.

### Measures

Study measures include the following:

- Student demographic characteristics, including demographic data that indicate race and ethnicity, gender, age, and SES measured by whether the student had received an income-based Pell Grant

- Student baseline schooling data, including full-time status, date of first enrollment, performance on the developmental literacy placement exam, enrollment in developmental English courses, and the academic term when the student took the developmental English course
- Academic performance indicators, such as transition from developmental to college-level English courses and the number of terms to qualify for the transition, credit completion in college-level English courses, credit accumulation, and persistent enrollment from one semester to the next
- Academic outcomes associated with longer term goals, including degree attainment and the number of terms to graduation and transfer from community college to a 4-year institution

## Sampling Procedure

Because our research was conducted after the intervention was completed, we utilized a research design that enabled us to compare AAPI students in AANAPISI-funded programs (participants) to a representative comparison group of AAPI students (comparison group), derived using propensity score matching (PSM) techniques. PSM reduces the bias due to confounding variables in arriving at estimates of treatment effects (Brand & Xie, 2010; Rosenbaum & Rubin, 1983). The participant group comprised 131 AAPI students who tested at the lowest level on the English placement exam (1 out of 4) enrolled in an AANAPISI-funded LC from spring 2009 to spring 2012. The comparison group was drawn from 872 AAPI students who did not participate in any LC but who also scored at the lowest level on the placement exam.

PSM was done based on the following student characteristics: age, gender, Pell Grant recipient status, first term of enrollment, academic period of intervention, and ethnicity. A logistic regression was used to generate the predicted propensity score of each student based on these characteristics and the nearest neighbor of each participant without replacement given the large pool in the full comparison group. For those with the same predicted propensity scores, the matched student was chosen randomly. PSM was conducted separately for the participant group and the comparison group. The resulting matched groups comprised 118 students from the comparison group who most closely matched observable characteristics of the participant group (see Tables 5.1 and 5.2). Missing data at random account for the incomplete match.

The logistic model, where $y$ is a binary variable for treatment status and firstterm, academicperiod, and ethnicity consist of multiple binary variables for each term and ethnicity. *Age* refers to the age in years, *firstterm* refers to the term students were first enrolled in the college, and *academicperiod* refers to the term in which students took developmental English. In cases where students repeated the course, the initial term of enrollment was included. The logistic model is presented as follows:

$$y = \beta_0 + \beta_1 \left(\text{age}\right) + \beta_2 \left(\text{male}\right) + \beta_3 \left(\text{Pell}\right) + \beta_4 \left(\text{firstterm}\right) + \beta_5 \left(\text{academicperiod}\right) + \beta_6 \left(\text{ethnicity}\right) + \beta_7 \left(\text{fulltime}\right) + \varepsilon.$$

Figure 5.1 presents the PSM histograms before (untreated) and after matching (treated) and visually demonstrates a close match between the two groups.

## Data Analysis

To examine the impact of the intervention, we employed chi-square and *t*-test analyses to determine if differences in short-term and long-term outcomes were significantly different for students who participated in the intervention (LC) and students in the comparison groups (no LC). To determine if participants were more likely to transition into college-level courses and, if transitioned, were more likely to pass the college-level course, we employed a chi-squared test for independence, with Yeats' correction for continuity. Independent sample *t*-tests were conducted to compare the number of terms it took to transition to college-level course work and overall credit completion rates for participants and the comparison group. In testing for the assumption of equal variances, we ran the Levine's test for equality of variances, and in both cases, differences were found to be nonsignificant; therefore equal variance could be assumed. Similarly, we conducted chi-square analysis to determine if participants subsequently earn associate's degrees and *t*-tests among the subset degree earners to see if there was a significant difference in the number of terms it took, on average, to graduate.

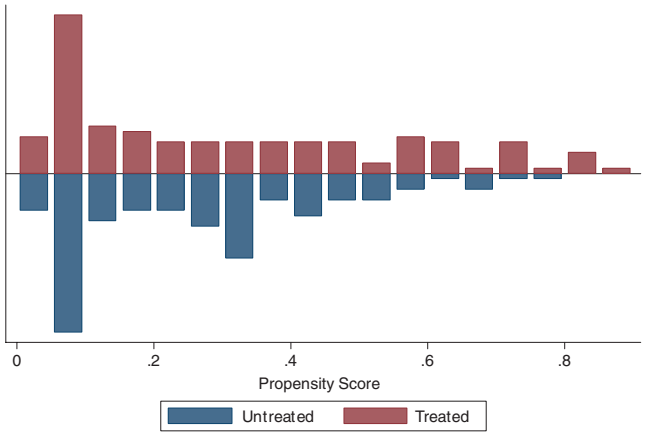


**Figure 5.1** Propensity score histogram.

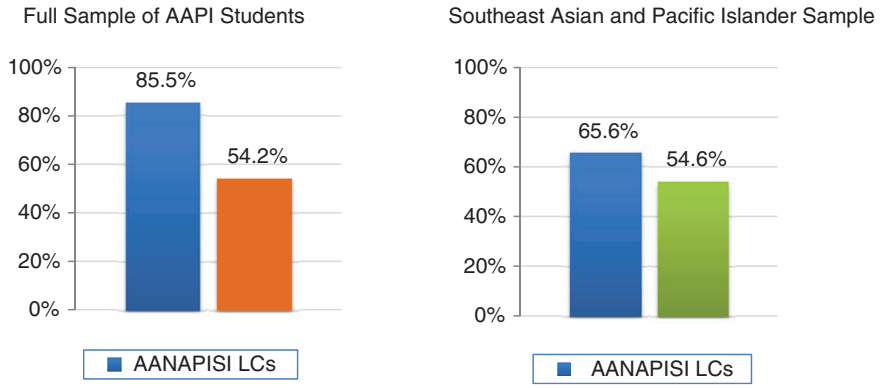


**Figure 5.2** Percentage transitioned to college-level English. Full sample $\chi^2_{(1)} = 30.97, p < .01$; target sample $\chi^2_{(1)} = 9.23, p < .01$.

## Results

Our findings reveal that through the various and simultaneous strategies employed within the LC, these practices contributed to the short- and long-term educational success of AAPI students.

### Short-Term Outcomes

AAPI students in the AANAPISI LC experienced higher levels of short-term academic success, as measured by transition from developmental to college-level courses, time to transition, and pass rates in those courses. As Figure 5.2 highlights, for example, there is an impressive difference in the transition rates from developmental to college-level English courses when comparing AAPI students in the LC (85.5%) to AAPI students who did not participate in any LC (54.2%), $p < .01$.

The short-term academic success experienced by all AAPI students enrolled in LCs was also true for the Southeast Asian and Pacific Islander students enrolled in the LCs at De Anza. These students were of particular focus for the institution, as De Anza College sought to address high rates of placement into developmental education courses and low transition and success rates (De Anza College, 2012) within these populations. Like the impact on the overall AAPI LC group, Southeast Asian and Pacific Islander subgroups in LCs experienced higher rates of transition and course success rates than their non-LC peers (65.6% vs. 54.6%, respectively), $p < .01$ (Figure 5.2).

AAPI students in the LC were also significantly more likely to transition into college-level English at a faster rate—within two terms following the intervention—as compared to non-LC students (2.2 terms vs. 2.9 terms, respectively), $p < .05$ (Figure 5.3).

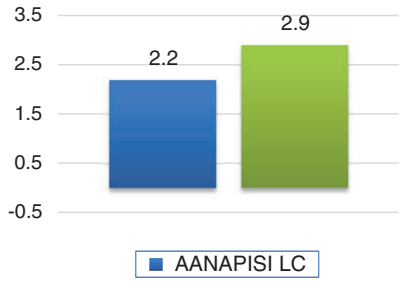


**Figure 5.3** Average number of terms from intervention to college-level English, $t(170) = 2.50$, $p < .05$.

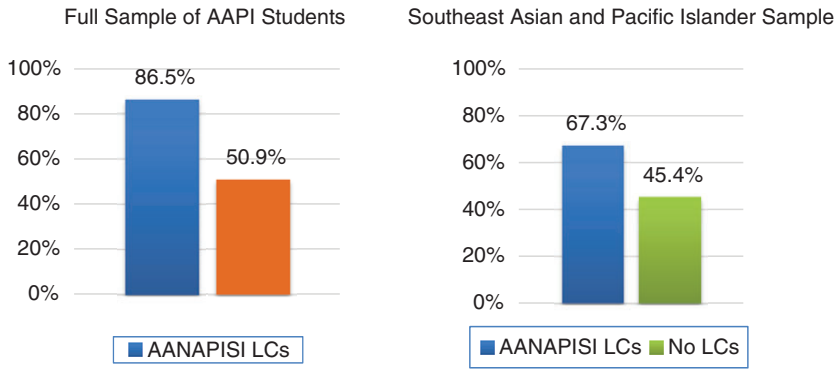


**Figure 5.4** Percentage who passed a college-level English course, among students who originated from developmental English courses. Full sample $\chi^2_{(1)} = 34.89, p < .01$; target sample $\chi^2_{(1)} = 13.14, p < .01$.

This impact carries through, as LC students are also more much likely to pass their college-level English courses, as compared to non-LC students (86.5% vs. 50.9%, respectively), in the semester following their enrollment in the intervention, $p < .01$ (Figure 5.4).

Our findings also revealed the difference in course passing rates for Southeast Asian and Pacific Islander students; 67.3% of these students in LCs passed their college-level English class, as compared to only 45.4% of their non-LC peers, $p < .01$. Given these statistically significant findings for a group of students who experience some of the lowest educational attainment rates in the nation (Teranishi, Lok, & Nguyen, 2013), LCs offer a promising opportunity for improving the academic outcomes of some of the most underserved students and warrant further attention.

In addition to these findings, we also compared LC and non-LC students for the mean passing rate for *all* courses taken during the term of the intervention as well as one term following the intervention (see Figure 5.5). We found that LC students had a higher course passing rate one term following the intervention, $p < .01$. Although not significant, students in the LC had higher course passing rates in the term of intervention than students not in the LC. Additionally, although LC students and non-LC students had similar rates of credits attempted, the higher course passing rate among LC students resulted in a higher mean number of credits earned both in the term of the intervention (14.1 vs. 13.2) and in the term following the intervention (12.7 vs. 12.4).

## Long-Term Outcomes

In addition to short-term outcomes, we also examined the impact of LCs on the long-term academic outcomes of students, which are measured by persistence, transfer, and degree attainment. Of these three outcomes, our findings, first, importantly reveal that LC participants are more likely than non-LC participants to graduate with an associate's degree or certificate.

In fact, 18.8% of those enrolled in the LC earned an associate's degree, whereas only 4.1% of students not enrolled in any LC achieved the same success—a significant difference in attainment rates, $p < .01$ (Figure 5.6). This is an important finding given that most community college students who are placed in developmental education do not earn a college degree (Bailey, 2009), and the study findings are situated within national education priorities focusing on completion.

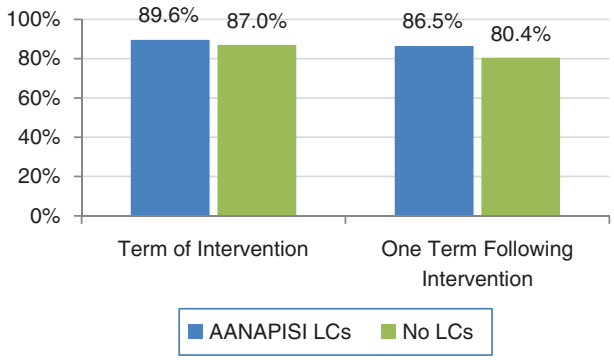


**Figure 5.5** Course passing rates in term of intervention and one term following intervention. Term of intervention, nonsignificant; one term following, $t(170) = -4.37, p < .01$.

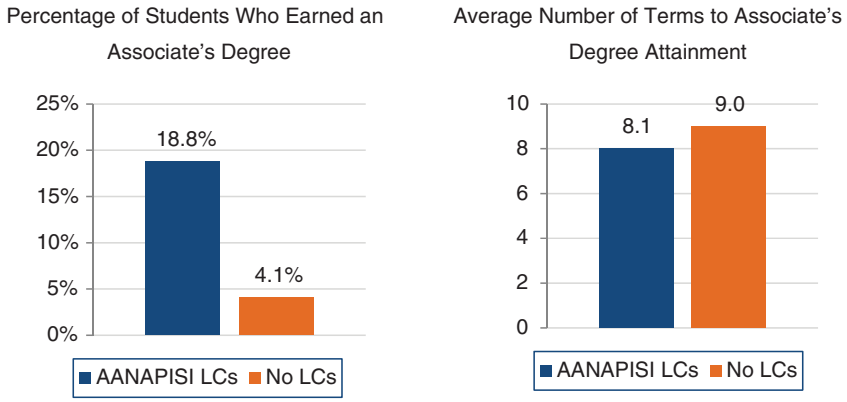


**Figure 5.6** Percentage of students who earned an associate's degree and time to degree. Full sample $\chi^2_{(1)} = 7.35, p < .01$; Number of terms $t(170) = 1.68, p < .10$.

Additionally, this success was achieved in a shorter but nonsignificant period of time, $p < .10$; AAPI students in the LC did so in 8.1 quarters, as compared to 9.0 quarters for their non-LC counterparts (Figure 5.6).

Finally, although not statistically significant, LC students had a greater likelihood of transferring to a 4-year college compared to non-LC students (Figure 5.7). Also, LC students who transferred did so in less time compared to non-LC students who transferred. These findings were not statistically significant, which may be a result of a small sample size, especially this many terms following the intervention. However, these findings provide valuable context for understanding the significance of the transfer rates and are accordingly included. Moreover, given the high attrition rates and low degree attainment and transfer rates for community college students who are placed in developmental education (Bailey, 2009), these findings point to a need to further examine LCs as an approach to improve the long-term educational success of students, especially for racial/ethnic minority students at MSIs.

## Discussion

This research adds to the literature on developmental education, LCs, educational outcomes of AAPI community college students, and the impact of MSIs. Overall, we found that, on average, AAPI students in developmental education LCs were more academically successful than students not enrolled in LCs. AAPI students who participated in the AANAPISI LC had a significantly higher rate of transitioning to college-level course work, and in shorter time, and also passed their college-level English course at much higher rates than non-LC AAPI students in developmental education. Additionally, AAPI students in the AANAPISI-funded LC were much more likely to earn a degree or certificate than students not in a LC. Finally, the institution had success in utilizing LCs to improve outcomes for their target populations—Southeast Asians and Pacific Islanders. Given the barrier developmental education often creates for students in their path toward earning a degree or transferring to 4-year institutions, these findings are critical for considering strategies and interventions that

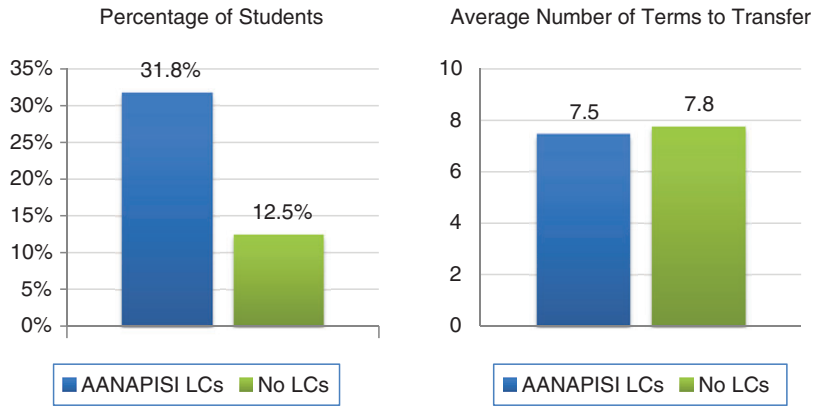


**Figure 5.7** Percentage of students who transferred to a 4-year college and the number of terms to transfer. This includes students who transferred with and without earning an associate's degree; findings nonsignificant.

can improve the academic outcomes of underrepresented students in community colleges (Bailey, 2009; Bailey & Cho, 2010), especially when we consider the return on investment of AANAPISIs.

Equally important to consider is the length of time it takes students to transition from remedial to college-level courses, as it relates to the likelihood of persistence and degree attainment of community college students (Complete College America, 2011). LCs can play a critical role in mitigating the amount of time it takes students to transfer or earn a degree (Scrivener et al., 2008). The findings from this study corroborate the findings of previous studies that have found that students in developmental English LCs pass and transition to college-level English in lesser time than students who do not benefit from LCs (Scrivener et al., 2008).

Given the need to improve passing rates, persistence, and degree attainment of students in developmental education, LCs may provide an added value to the capacity of an institution in improving outcomes for students. The targeted MSI-funded LC showed improved academic success of low-income AAPI students over similar non-LC students. Overall, these findings are critical for considering the approaches that may move the academic needle, or bring added value, to improve outcomes for community college students. Given that approximately 60% of all students entering community college enroll in at least one developmental education course (Bailey, 2009), while very few go on to earn degrees or transfer, opportunities for improving their degree attainment are worthy of further exploration.

These findings also point to the importance of MSI funding in allowing MSIs the opportunity to incorporate interventions to improve student outcomes, with particular attention to low-income students of color. Without the AANAPISI funding, De Anza College would not have had the opportunity to incorporate an AAPI-focused LC to improve the academic success of students. This study also highlights the challenges associated with studies of grant-funded programs, given that these programs target a small number of students and for a short period of time, which limits opportunities for more rigorous statistical analysis and the ability to identify statistically significant results. This is particularly challenging for longitudinal studies because the longer students are enrolled in college, the higher the attrition rate will be, which further reduces the sample size and raises the risk of having nonsignificant results.

## Limitations

This study has some notable limitations that should be considered for future studies on cohort programs utilizing quasi-experimental designs. First, in this study, we examined an LC at one site; therefore the findings cannot be generalized to other programs, schools, or student populations. However, the findings from this study are comparable to those of other studies on LCs (Baker & Pomerantz, 2000; Bloom & Sommo, 2005; Tinto, 1998; Tinto, Goodsell-Love, & Russo, 1994; Tinto, Russo, & Kadel, 1994). Second, experimental and random assignment research designs are the gold standard for assessing the impact of interventions on groups of people (Cohen, Brawer, & Kisker, 2014). Although we were not able to take an experimental approach, utilizing a PSM technique allowed us to compare the educational outcomes of students who placed in the same level of developmental education with similar characteristics (e.g., ethnicity), thus eliminating bias due to certain confounding variables, but could not account for all of them, most notably the role of scheduling convenience and opportunity to enroll in the intervention course.

Moreover we could not determine with full confidence the extent to which selection bias may have been a factor in the comparability of our treatment and control groups. That said, additional qualitative research we conducted suggests that many participants ended up in the interventions as a result of convenience (e.g., scheduling and availability) as opposed to other factors. The AANAPISI LC was offered in the daytime 4 days a week. Interviews with the AANAPISI program staff at De Anza College revealed that all enrolled AAPI students who qualified for the developmental English course were contacted, via e-mail and telephone, about the opportunity to participate in the AANAPISI LC. However, only students whose schedules permitted were able to enroll in the course. We are confident that, though imperfect, our matched comparison groups offer worthwhile comparisons.

Furthermore, the small sample sizes of the AAPI students in the AANAPISI LC generally and the targeted Southeast Asian and Pacific Islanders specifically could have resulted in findings not being statistically significant. However, nonsignificant findings do not mean that the findings are not notable (Faircloth, Alcantar, & Stage, 2015). The same is true for the limited time that had passed for measuring outcomes longitudinally. Potentially, not enough time had passed to demonstrate a statistically significant impact on long-term outcomes, such as transfer and degree attainment, but our ability to conduct analysis on longer term outcomes was negatively affected by attrition and shrinking sample sizes.

Lastly, another limitation to this study is that although we can speculate that the various components of the LC made a difference in student outcomes, we cannot determine what about the LC made this difference. For example, was the difference in outcomes due to taking the course itself, or was it the embedded services? This question may be more appropriately addressed through qualitative research.

## Implications for Research, Policy, and Practice

A primary goal of the AANAPISI program is to afford campuses an opportunity to experiment with practices that help students reach their full degree-seeking potential. This analysis demonstrates the potential impact on the number of AAPI students who could transition from developmental to college-level English at De Anza College if given the opportunity to participate in LCs. More studies like this are needed to demonstrate where MSI funding is being invested and how MSI-funded programs and services impact the educational outcomes of low-income students of color.

These findings also underscore the importance of ongoing assessment to guide institutional decision-making processes to maximize the impact of increased resources and opportunities. The significant improvement in outcomes for the students who participated in the programs funded by the AANAPISI grant and the potential campus-wide impact of fully scaled programs demonstrate the critical role that MSIs play in achieving the nation's higher education agenda.

Moreover, these findings present additional implications for research, policy, and practice that are relevant, not just to AANAPISIs, but to all MSIs. These include the following.

### Research

1. While federal funding has supported the foundational and impactful work of AANAPISIs, and other MSIs, the extant literature on MSIs has focused primarily on the aggregate educational outcomes of students enrolled in those institutions rather than on the impact of such programs, services, and practices. Accordingly, there remains a need for rigorous research that extrapolates specifically on the link between funding and outcomes for the underrepresented students served at MSIs.
2. Although there is a growing body of literature on the success of MSIs in improving the academic experiences and outcomes of underrepresented students, there is a need to contribute explicit research on how MSIs, cumulatively, move the academic success needle, particularly within the context of national higher education priorities, like the college completion agenda.

### Policy

3. Federal funding allows institutions to develop programs that directly support the success of underrepresented students and increase institutional capacity to improve academic success (e.g., degree attainment). Accordingly, financial support for institutions serving the nation's most underserved populations is critical.

4 Studies like this one provide an excellent policy opportunity to disseminate and scale up best practices to broaden the education sector's reach in improving educational outcomes.
5 Given the limited capacity AANAPISIs, and all other MSIs, often face, there is a need to support the development of assessment practices that help to sustain successful institutional initiatives and drive innovative research that makes the case for MSIs.
6 Government and foundations play a critical role as partners who can provide opportunities to further MSI programs and services empirically demonstrated to improve academic success.

## Practice

7 Interventions should target a particular academic barrier identified on campus (e.g., transition from developmental to college-level course work). More narrow goals help to define program goals and activities and, thus, measures of success. This also provides a strong foundation for institutional buy-in, a key component of successful interventions.
8 Institutional research that can contribute to the intervention's assessment process is critical to the immediate and long-term success of the intervention, as it defines the measure for program success and helps to sustain future efforts.
9 Evidence of success should drive efforts to replicate and scale up programs. These findings should also be shared with a broader audience outside the institution.
10 The engagement of campus constituents in regard to the intervention broadly, and the assessments specifically, is a necessary component to situate the efforts within institutional priorities and to generate buy-in for the program's continued existence and success.

### Suggested citation:

Alcantar, C. M., Martin, M., Nguyen, B. M. D., Teranishi, R. T., & Muñoz, J. (2017). The return on investment for an AANAPISI-funded program: Outcomes for Asian American and Pacific Islander community college students. In M. Gasman, A. C. Samayoa, & M. Nettles (Eds.), *Investing in student success: Examining the return on investment for minority-serving institutions* (Research Report No. RR-17-57, pp. 46–57). Princeton, NJ: Educational Testing Service. https://doi.org/10.1002/ets2.12187

## Notes

1 Reducing a university's decision to admit or deny students to both observable — standardized test scores and GPA — and unobservable variables, Dale and Krueger (2002) intuitively defined selective institutions as those with higher thresholds necessary for admissions acceptance. Thus, the present study operationalized selective flagship public universities as the premier institutions of their respective university systems, such as University of Texas at Austin and Texas A&M University at College Station, which correspondingly have the lowest, and therefore most selective, acceptance rates in the state of Texas.
2 University of Texas at Tyler is not included in the 1997 cohort as, at that time, this institution only enrolled upper-division (junior and senior) students; freshman were first admitted to University of Texas at Tyler in 1998. University of Texas at Brownsville is not included in the 1997 and 2000 as, at that time, the database did not record baccalaureate degree graduates from this institution.
3 University of Texas at Permian Basin is not flagged as an HSI as it did not meet the 25% threshold in 1997; future analyses will allow for time-varying HSI indicators. Further, we do not include Brazosport College, Midland College, or South Texas College as HSIs; although these institutions meet the 25% threshold, they primarily award associate degrees.
4 Selectivity rankings come from Barron's 1997 index and are time-invariant in cohort analyses.
5 In this report, the terms *African American* and *Black* are used interchangeably.
6 In this report, I refer to the study in general as B&B and to the first (U.S. Department of Education, 1996) and second (U.S. Department of Education, 1999) follow-up methodology reports as B&B:93/94 and B&B:93/97, respectively.
7 Job satisfaction was measured using a composite of nine survey items that assessed the level of one's satisfaction with pay, employment benefits, job challenge, work conditions, opportunities for promotion, job security, supervisor, coworkers, and educational benefits. Item responses ranged from 1 (dissatisfied) to 3 (very satisfied), while the scale ranged from 3 to 27.

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